

Audit Report



November 2010

Street Maintenance

City Needs to
Improve Planning,
Coordination, and
Oversight to
Effectively Manage
Transportation Assets

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THE CITY OF SAN DIEGO

November 29, 2010

Honorable Mayor, City Council, and Audit Committee Members
City of San Diego, California

Transmitted herewith is an audit report on the City's Street Resurfacing Program. This audit found that improvements are needed in planning, coordination, and oversight of street resurfacing projects to effectively manage the City's transportation assets and obtain the best return on investments. This report is in accordance with City Charter Section 39.2. The Results in Brief is presented on page 1. The Administration's response to our audit recommendations can be found in appendix IV on page 47 of the report.

If you need any further information please let me know. We would like to thank staff from the following departments for their cooperation and assistance during this audit: General Service Department/Street Division, Engineering & Capital Projects, Public Utilities, and Development Services. Their valuable time and efforts spent on providing us information are greatly appreciated. OCA staff that contributed to this audit report are Erin Noel, Edward Moreno, Deandre McCall, Kyle Elser, and Chris Constantin.

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Table of Contents

Results in Brief	1
Introduction	4
Background	4
Objectives, Scope, and Methodology	11
Audit Results	13
The City’s Investment in Pavement Preservation Is Limited and Improvement Is Needed to Effectively Manage Transportation Assets	13
Coordination and Planning of Streets-Related Work Is Limited	26
City Lacks Oversight of Private Entities’ Excavation of Streets	31
Other Pertinent Information	38
Conclusions	38
Recommendations	39
Appendices	
Appendix I: Rankings of Urban Areas	42
Appendix II: Sampling of Streets Excavated During Moratorium Period	43
Appendix III: Recommendation Priority Guide	46
Appendix IV: Management’s Response	47
Abbreviations	
AASHTO	American Association of State Highway and Transportation Officials
ARRA	American Reinvestment and Recovery Act
CIP	Capital Improvement Program
DSD	Development Services Department
E&CP	Engineering & Capital Projects Department
FHWA	Federal Highway Administration
GSD	General Services Department
OCA	Office of the City Auditor

OCI	Overall Condition Index
PTS	Project Tracking System
SDG&E	San Diego Gas & Electric

Figures

Figure 1: Pavement Deterioration Curve, May 2009	7
Figure 2: Options for Investment	7
Figure 3: Lifetime Project Costs for Reactive Versus Preventive Maintenance, Cost Per Lane Mile, 2010 Dollars	8
Figure 4: Preventative Maintenance, Rehabilitation, and Reconstruction Treatment Options and Costs	9
Figure 5: Detailed Transportation Budget, Fiscal Years 2004-2010	14-15
Figure 6: City's Transportation Budget by Category, Fiscal Years 2004-2010	15
Figure 7: Total Resurfacing, Fiscal Years 2004-2011	16
Figure 8: Linear Miles of Streets Resurfaced, Fiscal Years 2004-2010	17
Figure 9: Requirements to Achieve Various Levels of Maintenance and Annual Requirements to Maintain Level Once Goal Is Achieved	18
Figure 10: Total Linear Miles of Streets that Required Resurfacing to Attain High, Medium, and Low Levels of Maintenance and Actual Linear Miles that Were Resurfaced, Fiscal Years 2006-2010	19
Figure 11: Transportation Funding Sources and Restrictions	20
Figure 12: Percentage of Roads in Poor Condition and Additional Vehicle Operating Costs for 12 Most Populated U.S. Cities, Fiscal Year 2008	21
Figure 13: Components of Transportation Asset Management	23
Figure 14: City Departments' Responsibilities for Resurfacing and Capital Projects Conducted On or Below City Streets	24
Figure 15: Streets Excavated During Moratorium	27
Figure 16: Santa Monica Avenue Excavation during Slurry Seal Moratorium	28
Figure 17: Buho Court during Asphalt Overlay Moratorium	29
Figure 18: Pallux Way Excavations during Asphalt Overlay Moratorium	29
Figure 19: 1 st Avenue Excavation during Asphalt Overlay Moratorium	32
Figure 20: Excavation Fees Collected by DSD, Fiscal Years 2005-2010	34
Figure 21: Right-of-Way Permits Issued and Trench Cut Fees Collected by DSD, Fiscal Years 2007-2010	35
Figure 22: University Avenue Manholes after Trench Restoration	37

Results in Brief

Finding 1

The City's investment in pavement preservation is limited and improvement is needed to effectively manage transportation assets. The effective management of transportation assets and infrastructure requires sustained financial investment in pavement preservation and prioritization of capital assets that, if maintenance is deferred, will cost more in future years.¹ We found that the City's investment in pavement preservation is limited due to financial constraints, competing funding priorities, and restriction on the use of available funds. For example, the City invested about \$133 million or about 11 percent of total expenditures on transportation for resurfacing streets from fiscal year 2004 to 2010. As a result, the General Services Department (GSD)/Street Division estimates that the City has about \$377 million in deferred maintenance for street pavement and 17 percent of streets are in poor condition. By not prioritizing and increasing investments in resurfacing, the City will pay more in the long run, both because lifecycle costs increase as the condition of streets deteriorate and poor street conditions increase vehicle operating costs.

The City has not comprehensively managed transportation assets and investments, and pavement preservation and other transportation responsibilities have been decentralized among various City departments. The Federal Highway Administration (FHWA) and transportation industry leaders encourage state and local governments to use asset management—a strategic and systematic process of operating, maintaining, upgrading, and expanding transportation assets throughout their lifecycle.² True asset management considers the transportation system as an integrated whole and requires a comprehensive decisionmaking approach to transportation investment, including considering tradeoffs among modes and categories of investment.³ We found that the various departments are functionally segregated with differing roles and responsibilities and no one department or leader has been accountable for ensuring that the resurfacing program is effective. For example, GSD/Street Division is responsible for the pavement preservation program; the Development Services Department (DSD) issues excavation permits and collects fees from private entities; and the Engineering & Capital Projects Department (E&CP) inspects resurfacing projects and plans and manages capital transportation projects. This decentralization of responsibilities has contributed to coordination and oversight challenges addressed throughout this report. Based on our concerns and recommendations for improving coordination and integrating transportation functions, the City plans to reorganize and consolidate transportation management functions under a new Transportation and Storm Water Department—an important step in implementing transportation asset management. Without a unifying organizational structure that encourages efficiency, collaboration, and proactive management of transportation assets, the City cannot make wise investments that result in improved services and greater cost effectiveness.

¹ American Association of State Highway and Transportation Officials and TRIP, *Rough Roads Ahead* (Washington, D.C.: 2009), 27, and Government Finance Officers Association, *Best Practice: Preparing and Adopting Multi-Year Capital Planning* (2006), 1.

² FHWA, *Asset Management Overview* (Washington, D.C.: Dec. 2007), 4, and *Rough Roads Ahead*, 29-30.

³ *Transportation Asset Management Guide*, 4-7.

Finding 2

The City lacks effective coordination and planning of streets related work to reduce excavations into streets. Planning and coordination of all work on or under streets is critical to limit excavations—which will degrade and shorten pavement life—into newly resurfaced streets.⁴ To ensure that such excavations are minimized, San Diego Municipal Code prohibits excavations into streets that have received asphalt overlay and slurry seal for three years and one year, respectively, with a few exceptions, such as emergencies, the installation of new services, and nonlinear excavations.⁵ We found that about 18 percent or 7 of our sampling of 40 streets that were resurfaced during fiscal year 2009 were excavated by City departments or private entities during the moratorium period. Although all of these cases were excavated for reasons allowed in the Municipal Code, we believe that effective planning and coordination of this work would have enabled the City to avoid excavations in newly resurfaced streets and leverage resources for resurfacing.

Excavations were made into newly resurfaced streets for three reasons. First, City departments are not required to plan citywide excavation work or share their street resurfacing plan with other departments and private entities in advance and instead rely on the CityWorks geospatial imaging system to coordinate projects. Reliance on CityWorks is problematic because it has significant limitations, including outdated information, slow response time, and inability to identify project conflicts. Second, City departments do not obtain permits for work conducted on or under streets similarly to private entities.⁶ Third, the Municipal Code allows any entity to make nonlinear cuts into pavement or use trenchless technologies, such as drilling or boring holes, even during the moratorium.⁷ Research shows that both linear and nonlinear excavations degrade and damage pavement no matter how well cuts are repaired, because the impact extends beyond the location of the excavation.⁸ Based on our review of street resurfacing practices in other cities, we found that those with a high percentage of roads in good condition, such as Portland, OR and Atlanta, GA,⁹ require (1) a citywide 24-month excavation plan for all maintenance work, (2) a 12-month resurfacing plan to be shared with public and private entities doing street-related work, and (3) both private entities and city departments to apply for a permit to excavate in the public right-of-way. Without this level of planning and coordination of citywide maintenance that impacts streets, continued excavations into newly resurfaced streets will degrade pavement conditions, increase lifecycle costs of streets, and reduce City's ability to leverage resources and obtain the return on investment.

⁴ County of San Diego, Department of Public Works, *Pavement Cut Policy*, POL-RO-7 (San Diego, CA: Dec. 4, 2008), 1, and *City of Palo Alto Municipal Code* § 12.10.010.

⁵ *San Diego Municipal Codes* §62.1203 and §62.1204.

⁶ *San Diego Municipal Code* §62.1205. See also California Public Utilities Code Section 216. However, City departments are not required to obtain right-of-way permits per San Diego Municipal Codes §129.0702 -§129.0703.

⁷ *San Diego Municipal Codes* §62.1202-62.1204.

⁸ City of Santa Ana, *Streets & Technology Conference* (Santa Ana, CA.: Feb. 2000), 10, and Tarakji, Ghassan, *The Effect of Utility Cuts on the Service Life of Pavements in San Francisco, Volume 1: Study Procedure and Findings* (San Francisco, CA.: May 1995), 10, and Wilde, W. James, Grant, Carolyn, and White, George T., *Controlling and Reducing the Frequency of Pavement Utility Cuts* (Houston, TX.: 2003), 11.

⁹ 75 percent of Portland's roads and 90 percent of Atlanta's roads are in good or fair condition. *Rough Roads Ahead*, 36.

Finding 3

Issuing permits and collecting fees is key to providing oversight and control of development and construction projects in the City and an integral component in managing transportation assets; however, DSD lacks complete and accurate information on permits and fees. Before beginning any street excavation, private entities are required to obtain a permit and pay an excavation fee.¹⁰ During the moratorium period after streets have been resurfaced, DSD can grant a written waiver for the moratorium requirement and allow excavation for emergencies, new service, installation relocation, and non-linear excavations.¹¹ We conducted a sampling of 15 right-of-way permit applications with moratorium conflicts submitted to DSD by private entities from fiscal years 2007 through 2009. Permits were issued for 2 of 15 or about 13 percent of our sample even though a moratorium conflict was identified. We could not determine if permits issued by DSD were in accordance with moratorium requirements, such as receiving a waiver for new service installations, because DSD does not require that this information be recorded in its Project Tracking System (PTS) and has not maintained electronic or tabulated records of these waivers. DSD's lack of easily accessible records and information on which companies have received waivers makes it very difficult to hold private entities accountable for trench restoration work by reducing the City's ability to conduct post-construction inspections.

We also found that excavation fees collected by DSD have significantly declined. San Diego Municipal Code requires that excavation fees should be deposited into a designated fund and used to repair pavement problems within the associated area.¹² As an alternative to paying excavation fees, private entities can choose to execute either a warranty or a resurfacing agreement with the City.¹³ DSD collects most fees prior to issuing permits and deposits these into a revenue account. We found that the revenue account for excavation fees declined by 98 percent from fiscal year 2005 to 2010. DSD officials told us that the excavation fees collected significantly declined for three reasons. First, private entities have exercised the warranty option and are responsible for resurfacing the public right-of-way in lieu of paying a fee. DSD does not maintain records of warranties so we could not assess the extent to which they are used. Second, private entities have adapted to locating their trenches out of the public rights-of-way or used nonlinear excavations or trenchless technologies, such as micro trenching or boring, which are exempt from the fee. Although the Municipal Code allows these options, they can have a similar degradation effect as other excavations. Third, DSD has experienced a significant reduction in all development activity over the past three years due to the economic recession. Without effective and efficient permit issuance, the City is not overseeing and coordinating work done on or under streets by private entities resulting in increased excavations and degradation of streets. By not collecting fees, the City is losing much needed revenue to maintain and repair streets.

¹⁰ *San Diego Municipal Code §62.1205.*

¹¹ *San Diego Municipal Code §62.1203-62.1204.*

¹² *San Diego Municipal Code §62.1210.*

¹³ A warranty is a written agreement in lieu of paying a fee which requires that the entity resurface the street. *San Diego Municipal Code §62.1201 and §62.1205(d)(1)-(d)(3).*

Introduction

In accordance with the City Auditor's Fiscal Year 2011 Audit Work Plan, we conducted a performance audit of the coordination of the City's street maintenance program within the General Services Department's (GSD) Street Division and other City departments that have responsibilities related to resurfacing. For example Engineering & Capital Projects (E&CP) provides construction management and inspections for resurfacing projects, and the Development Services Department (DSD) issues permits and collects fees for work conducted in the public rights-of-way. This is our second of two reports on street maintenance—the first report recommended improving the accuracy and reliability of street condition information.¹⁴ Our objectives for this audit were to determine the extent to which the City effectively (1) invests resources and manages street assets to obtain the best return on investment, (2) coordinates work performed on or under City streets, and (3) provides oversight of work performed by private entities. The three major findings in this report correspond to each of these objectives.

We conducted our review from October 2009 to November 2010 and limited our work to those areas specified in the Objectives, Scope, and Methodology section of this report. We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives. We evaluated the internal controls related to our audit objectives. Our conclusions on the effectiveness of these controls are detailed within the following audit results.

The Office of the City Auditor thanks Department staff for their assistance and cooperation during this audit. Their valuable time and efforts spent on providing us information are greatly appreciated.

Background

Our nation's economy and our quality of life require highway and roadway systems that provide a safe, reliable, efficient, and comfortable driving environment. Transportation infrastructure provides lifelines for commerce, commuting, and pleasure travel, support of national defense, and disaster response. Transportation assets account for a major share of public sector investment and are among the most highly valued financial assets among state and local governments.¹⁵ However, years of underinvestment in America's transportation infrastructure due to tight budgets, competing demands, and soaring

¹⁴ Office of the City Auditor, *Performance Audit of the City's Street Maintenance Functions: The City Can Improve Its Effectiveness in Gathering and Utilizing Street Condition Information* (San Diego, CA: Oct. 26, 2009).

¹⁵ American Association of State Highway and Transportation Officials, *Transportation Asset Management Guide* (Washington, D.C.: Nov. 2002), 1-1

construction and energy costs has resulted in deferred maintenance and a deteriorating transportation infrastructure. Deteriorating roadway system affects citizens through increases in motor vehicle repairs and operating costs, traffic congestion, and safety issues. National leaders underscored the importance of addressing our deteriorating transportation infrastructure issue by providing \$27.5 billion for transportation projects in the American Reinvestment and Recovery Act (ARRA) of 2009.¹⁶ But the nation still has billions of dollars of unmet needs for highway maintenance, preservation, and reconstruction, and state governments face budgetary challenges in trying to pay for them all.¹⁷ For example, California's transportation funding has been diverted or borrowed in recent years to pay for non-transportation related General Fund purposes.

About 81 percent of California's transportation infrastructure is managed by cities and counties who are facing increasing pressures to demonstrate results, accountability, and transparency. In San Diego, long-term financial challenges have resulted in \$800 to \$900 million in deferred maintenance of capital infrastructure; GSD/Street Division estimates that about \$377 million of this is for street pavement.¹⁸ As the condition of infrastructure continues to decline and the City continues to deal with unprecedented budgetary and resource pressures, transportation officials are faced with the responsibility of making the best possible use of limited resources to manage a wide range of transportation assets.

Transportation Asset Management

Given the increased congestion, limited resources, and aging transportation infrastructure agencies are facing increasing pressures to demonstrate results, accountability, and provide transparency in their management of transportation assets. The Federal Highway Administration (FHWA), Transportation Research Board, American Association of State Highway and Transportation Officials (AASHTO), and other industry groups encourage state, regional, and local transportation agencies to use transportation asset management as an effective way to manage transportation resources. This strategic and systematic approach strives to provide the best return for each dollar invested by maximizing system performance, improving customer satisfaction, and minimizing lifecycle costs. Although, in the past, asset management has been considered to be synonymous with a single database, analytical tool, or component— such as maintenance management— true asset management provides a broader, multi-disciplinary and agencywide perspective on the optimal long-term management of transportation assets. The transportation system is considered to be an integrated whole and requires a comprehensive decisionmaking approach to transportation investment, including considering tradeoffs among modes and categories of investment. For example, tradeoff analysis could be conducted to assess preventative versus deferred maintenance strategies or widening a section of road versus implementing an information technology project to address

¹⁶ San Diego received about \$20.2 million in ARRA funds which was exchanged for TRANSNET funds with the regional transportation agency, SANDAG. About \$14 million was budgeted for transportation-related capital projects, such as a bikeway project and installing sidewalks, and about \$6 million is unprogrammed in case the state of California eliminated funds it provides to cities from the gasoline tax.

¹⁷ The Council of State Governments, *Increasing Public Awareness of Infrastructure Costs and Finance* (Lexington, KY: Sept. 2009).

¹⁸ This excludes deferred maintenance of water and wastewater enterprises.

congestion. Although the full benefits of transportation asset management are realized when all investments are considered in unison, some benefits can be achieved by applying asset management principles to any one investment type of program.¹⁹

Pavement Preservation

A comprehensive, fully-integrated asset management system will fold infrastructure preservation considerations into the overall decisionmaking process. Pavement preservation is an important aspect of transportation asset management particularly considering the limited resources transportation agencies have to address increasing demands. The goal of preservation—which encompasses reconstruction, rehabilitation, and preventative maintenance—is to cost-effectively and efficiently improve asset performance. The focus has shifted toward preserving and maintaining existing streets, because maintaining a road in good condition is easier and less expensive than repairing one in poor condition.

When ride quality and structural conditions of streets are allowed to deteriorate to fair or poor condition, as has often been the case, time-consuming and costly rehabilitation becomes necessary to repair structural damage and restore pavement conditions.²⁰ The Pavement Preservation Foundation reported that investing \$1 on pavement preservation will eliminate or delay spending \$6 to \$14 on rehabilitation or reconstruction.²¹ See figure 1. FHWA and AASHTO encourage transportation agencies to extend the service life of roads before they need major rehabilitation or replacement.²² Industry best management practices call for improving street conditions to a level where preventative maintenance can be used to maintain them.²³ Pavement preservation—a planned strategy of cost effective treatments applied to existing roadways—will prevent the street from failing so that it can reach its expected service life, enhance pavement performance, and better meet customer needs. See figures 2 and 3. The pavement condition is generally measured by a weighted index—called the overall condition index (OCI)—which is calculated using weighted attribute characteristics, such as surface distress and ride quality.²⁴ The OCI generally ranges from 0 to 100 with 100 representing the best street condition.

¹⁹ *Transportation Asset Management Guide*, 4-7.

²⁰ U.S. Department of Transportation, Federal Highway Administration, *Asset Management Overview* (Washington, D.C.: Dec. 2007), 16.

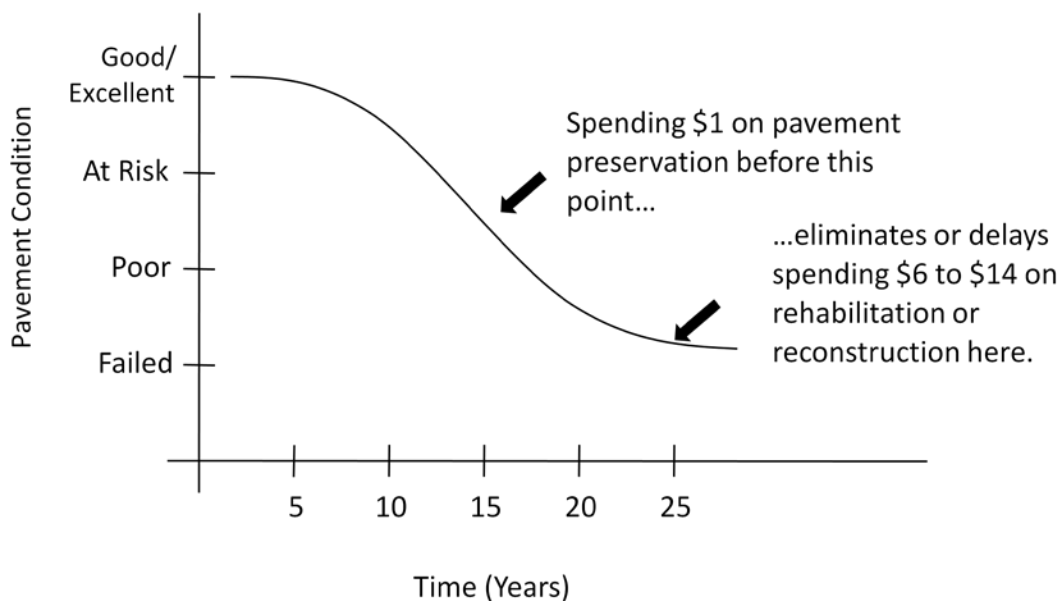
²¹ American Association of State Highway and Transportation Officials and TRIP, *Rough Roads Ahead* (Washington, D.C.: 2009), 28

²² *Asset Management Overview*, 16, and *Rough Roads Ahead*, 27.

²³ County Engineering Association of California, California State Association of Cities, and League of California Cities, *California Statewide Local Streets and Roads Needs Assessment* (Richmond, CA: Oct. 20, 2009), v.

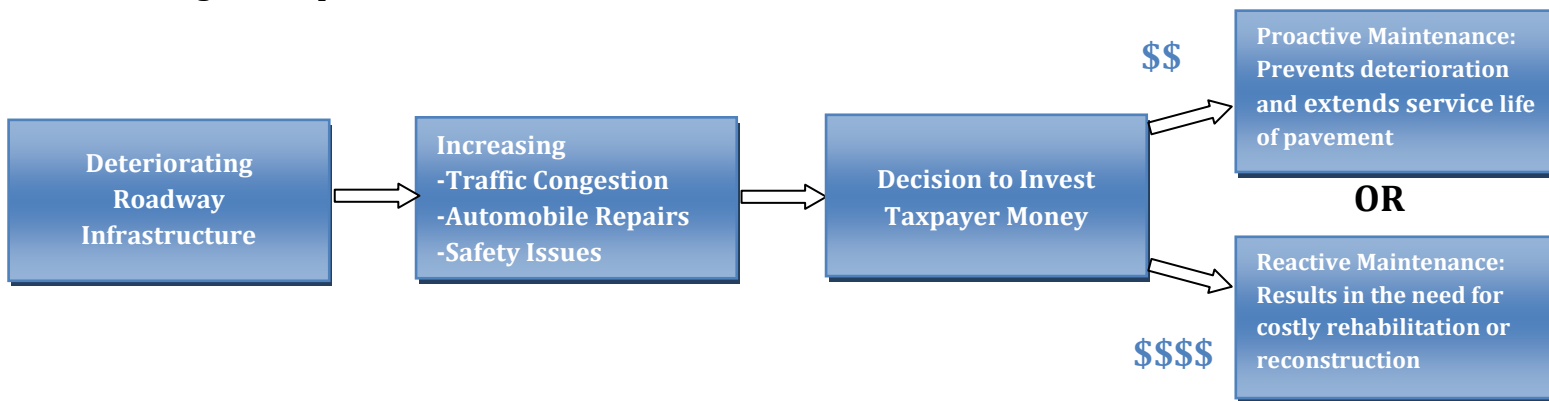
²⁴ The OCI is also referred to as the pavement condition index.

Figure 1: Pavement Deterioration Curve, May 2009



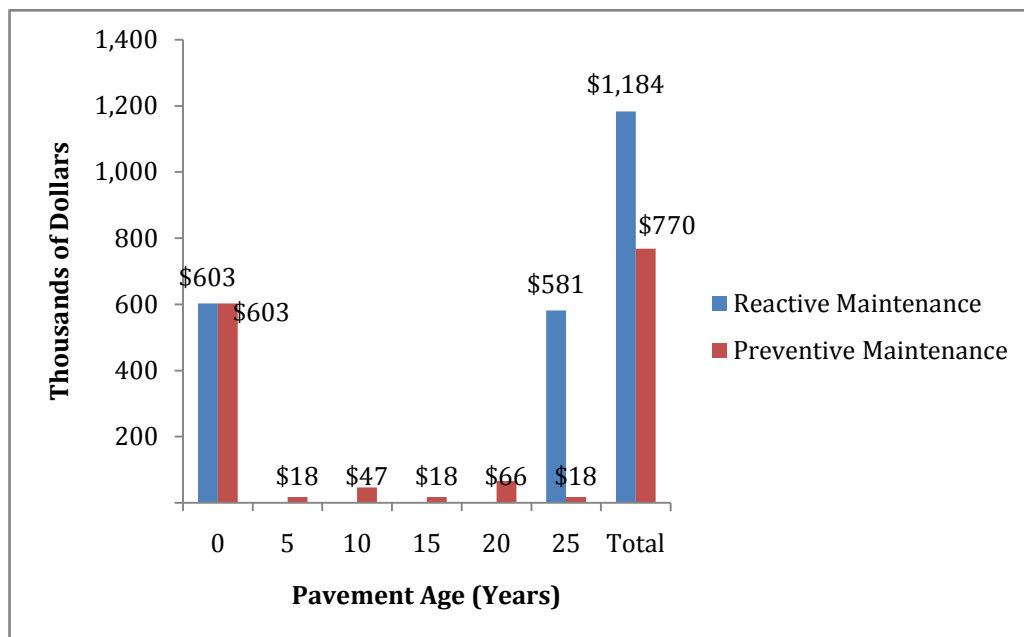
Source: National Center for Pavement Preservation.

Figure 2: Options for Investment



Source: OCA's analysis of National Center for Pavement Preservation information.

Figure 3: Lifetime Project Costs for Reactive Versus Preventive Maintenance, Cost per Lane Mile, 2010 Dollars



Source: OCA analysis of U.S. Department of Transportation, Federal Highway Administration data.

Note: We converted Federal Highway Administration data from 2003 to 2010 dollars. Our numbers may under represent true costs due to increases in energy and construction costs during this time period, but we believe they provide an accurate illustration of the cost differential between reactive and preventative maintenance.

To be effective, the right treatment should be applied to the right pavement at the right time. See figure 4. Preventative maintenance includes slurry seal²⁵ and thin asphalt overlay.²⁶ If applied on time—about every five to seven years—slurry seal can reduce pavement deterioration and help pavement reach its expected service life of about 25 years. Asphalt overlay²⁷ is used to rehabilitate streets with moderate pavement deterioration due to aging, traffic, and other stressors. Although overlay is the more expensive alternative, if treatment is performed on schedule it can increase the life of a street by about 21 years. Particularly due to the varying funding sources and their use restrictions, it is important to note that the City classifies slurry seal as street maintenance while asphalt overlay is considered to be a capital project.

²⁵Slurry seal is a coating of ¼ inch thick rubberized emulsion mix with aggregate—finely crushed rock and sand. Slurry seal includes filling surface cracks and voids, sealing the pavement surface, and adding texture and uniform appearance to the street.

²⁶ *California Statewide Local Streets and Roads Needs Assessment*, iv.

²⁷ Asphalt overlay consists of edge milling against the gutter line of a street and placing 1.5 to 3 inches of asphalt over the existing pavement.

Figure 4: Preventative Maintenance, Rehabilitation, and Reconstruction Treatment Options and Costs

	OCI	Condition	Treatment	Recommended Timing	Cost Range per square yard ^a
Preventative Maintenance	70-100	Good - Excellent	Slurry Seal	Years 7 and 14 (depending on structural integrity)	\$2.70 - 2.80
	50-69	At Risk	Thin Asphalt Overlay	Years 7 and 14 (depending on structural integrity)	\$17.90 - \$29.10
	25-49	Poor	Thick Asphalt Overlay	Year 21	\$26.40 - \$29.10
Reconstruction	0-24	Failed	Reconstruct	Year 26	\$61.20 - \$91.80

Source: County Engineers Association of California, California State Association of Counties, and League of California Cities *Statewide Local Streets and Roads Assessment*.

^a Unit cost ranges are statewide averages.

Another aspect of pavement preservation is to minimize excavations into newly resurfaced streets, because they damage the strength and life of pavement adjacent to the trench. Excavations degrade and shorten the life of the street no matter how well the excavation is restored.²⁸ Many cities prohibit excavations into newly resurfaced streets for a certain period of time. For example, San Diego Municipal Code prohibits excavations into streets that have received asphalt overlay and slurry seal for three years and one year, respectively, with a few exceptions, such as emergencies and nonlinear excavations.²⁹

San Diego's Street Resurfacing Program

The City of San Diego is responsible for maintaining about 2,735 miles of streets and 271 miles of alleys within its 342.5 square miles. GSD/Street Division has the primary responsibility for street resurfacing and uses a computer-based pavement management system to assist in selecting and prioritizing streets to

²⁸ San Diego Resolution Number R-298358 and *San Diego Municipal Code §62.1201*.

²⁹ Nonlinear excavations are defined as 5 feet-by-five feet or smaller. *San Diego Municipal Codes §62.1203 and §62.1204*.

be resurfaced.³⁰ The Division also prepares and bids annual resurfacing contracts. However, several other City departments have responsibilities related to this process or conduct work on or under the public rights-of-way—that is, City streets and sidewalks. For example, DSD is responsible for reviewing applications, issuing permits to and collecting applicable fees from private entities that will be performing work in the public rights-of-way. In addition, various divisions within E&CP are involved in work that affects street resurfacing, such as inspecting completed resurfacing projects, and E&CP manages the City’s Capital Improvement Program (CIP). The CIP is the City’s annual construction program for making tangible long-term improvements to buildings, bridges, streets, and other infrastructure and includes a wide range of projects, such as parks, water and sewer pipelines, and transportation.

Private Entities Conduct Work on or Under City Streets

A number of private entities may affect the public rights-of-way by conducting work on or under streets, including contractors, private utilities, and communications companies. For example, San Diego Gas & Electric (SDG&E) and major franchise utilities, such as AT&T, Cox Communications, and Time Warner Cable have an extensive undergrounding program with the City to bury overhead utility lines. The franchise agreements with the City or state authorize the utilities to conduct work in the public rights-of-way based on Federal Communications Commission and California Public Utilities Commission regulations.³¹ Franchise agreements are developed to ensure that the public receives cable, gas, internet, and telephone services. In exchange for franchising the use of public streets and the public right-of-way, the City receives a percentage of annual gross receipts from private entities as compensation. The percentage of the gross receipts and duration of the agreement varies by franchise agreement. When improvements affect the public rights-of-way, the City requires various permits and charges fees, including rights-of-way and traffic control permits and excavation fees to provide a level of oversight and offset degradation effects.³² As indicated above, DSD is responsible for issuing permits to and collecting fees from private entities.

Underground Service Alert/DigAlert

In response to excavation tragedies, the State of California set standards for excavators and owners of subsurface installations.³³ The law requires that owners of subsurface installations establish membership with a regional notification center—the Underground Service Alert.³⁴ To provide advance warning of intended work near underground installations, excavators must notify the center at least two days prior to planned construction. The center uses its email- or fax-based service, called DigAlert, to notify subsurface owners so that they can mark out their installations, such as pipes and wiring.

³⁰ GSD/Street Division uses a pavement management system called PAVEMENTview by Cartêgraph.

³¹ Federal Communications Commission Act of 1996, section 706, and California Public Utilities Act of 1912, section 7901, and Digital Infrastructure and Video Competition Act of 2006, sections 5800–5970.

³² *San Diego Municipal Code sections §129.0701 and §62.1201.*

³³ *State of California Government Code 4216 and <http://www.digalert.org/cybd.asp>.*

³⁴ *State of California Government Code Section 4216 – 4216.9.*

Objectives, Scope, and Methodology

To improve oversight and ensure that City programs are effective and efficient, we conducted a review of the City's Street Maintenance Program in accordance with *The City Auditor's Fiscal Year 2011 Audit Work Plan*. This is our second of two reports on street maintenance—the first report focused on the accuracy and reliability of street condition information.³⁵ Our objectives for this audit were to determine the extent to which the City effectively (1) invests resources and manages street assets to obtain the best return on investment, (2) coordinates work performed on or under City streets, and (3) provides oversight of work performed by private entities. The three major findings in this report correspond to each of these objectives.

In conducting this review, we focused our scope on the inter-departmental and inter-organizational coordination issues related to street resurfacing activities, including asphalt overlay and slurry seal, from fiscal year 2004 to the present. We excluded concrete streets from our analysis. We also reviewed best practices from other cities for organizational structure, planning and coordination, and permit requirements and compared these with current policies and procedures in San Diego. To determine the extent to which the City invests resources and manages street assets to obtain the best return on investment, we assessed Capital Improvement Program budgets and resurfacing contracts for fiscal years 2004 through 2010. We also reviewed Federal Highway Administration and industry best practices for management of transportation assets and interviewed officials from GSD/Street Division, DSD, and E&CP. We reviewed the fiscal year 2009 slurry seal and asphalt overlay contracts and related monthly project schedules and invoices. We also reviewed the 2009 Standard Specifications for Public Works Construction publication and interviewed GSD/Street Division and E&CP/Field Engineering Division officials to identify requirements and procedures for administering construction contracts.

To determine the extent to which City departments effectively plan and coordinate work performed on or under City streets, we reviewed the San Diego Municipal Code and policies and procedures for planning, communicating, and coordinating inter-departmental work to limit the number of street excavations, and interviewed officials from other City departments that have responsibilities related to resurfacing, including Engineering & Capital Projects (E&CP) which provides construction management and inspections for resurfacing projects and the Development Services Department (DSD) which issues permits and collects fees for work conducted in the public rights-of-way. We also conducted a judgmental sampling of streets to determine compliance with the post-resurfacing street cut moratorium and assessed the CityWorks system to determine the extent to which information is current, accurate, and provides an effective method of checking for conflicts in planned work on or under City streets. We did not intend to project our sample across the entire population, but it was used to identify problems with compliance.

³⁵ Office of the City Auditor, *Performance Audit of the City's Street Maintenance Functions: The City Can Improve Its Effectiveness in Gathering and Utilizing Street Condition Information* (San Diego, CA: Oct. 26, 2009).

To determine the extent to which City departments provide oversight of work performed on or under City streets by private entities, such as private utilities and developers, we reviewed San Diego Municipal Code and interviewed GSD/Street Division and E&CP/Field Engineering Division officials to identify requirements and procedures related to oversight of private entities conducting excavations in the public right-of-way. We also interviewed DSD/ Neighborhood Code Compliance Division officials to identify requirements and procedures related to the permit process and conducted a judgmental sampling of permit applications to determine whether DSD enforced the moratorium on excavations into streets that have received asphalt overlay and slurry seal during the 3-year and 1-year respective periods. We did not intend to project our sample across the entire population, but it was used to identify problems with enforcement. In addition, we reviewed franchise agreements to determine the extent to which the City has jurisdiction to monitor work and collect fees from private entities and conducted a survey of private utility officials to determine the extent to which they plan and coordinate undergrounding work with applicable City departments.

We assessed the reliability of GSD/Street Division data on street conditions and DSD data on permits by (1) reviewing existing information about the data and the systems that produced them, (2) interviewing agency officials knowledgeable about the data, and (3) randomly selecting data from each of the departmental systems to test. While our review found some issues with the data systems, we believe our samplings provide sufficient and appropriate evidence to determine whether the City is effectively managing transportation assets, coordinating and planning street resurfacing, and overseeing excavations of City streets by private entities. While problems with the data source did not impact the scope of this audit, we intend to conduct a further review of DSD's data system.

Audit Results

FINDING 1 – THE CITY’S INVESTMENT IN PAVEMENT PRESERVATION IS LIMITED AND IMPROVEMENT IS NEEDED TO EFFECTIVELY MANAGE TRANSPORTATION ASSETS

Comprehensive planning and long-term investment are keys to making sound decisions about infrastructure.³⁶ We found that the City’s investment in pavement preservation is limited due to financial constraints, competing funding priorities, and restriction on the use of available funds. In addition, the City has not comprehensively managed transportation assets and investments, and pavement preservation and other transportation responsibilities have been decentralized among various City departments. Based on our concerns and recommendations, the City plans to reorganize and consolidate transportation management functions under a new street department.

Investment in Resurfacing Is Limited Due to Tight Financial Constraints and Restrictions on Use of Available Funds

The effective management of transportation assets and infrastructure requires (1) sustained financial investment in pavement preservation and (2) prioritization of capital assets that, if maintenance is deferred, will cost more in future years.³⁷ We faced challenges in compiling the City’s transportation budget because various departments have responsibilities for different transportation functions and these are budgeted separately and without consideration for other transportation needs. We found that the City has invested about \$133 million in resurfacing streets from fiscal year 2004 to 2010. See figures 5 and 6. This represents about 11 percent of total expenditures on transportation during this time period. The remaining 89 percent was spent on (1) street operations and maintenance, such as pothole repairs and street light replacements, (2) transportation engineering operations, (3) public utilities trench repairs, and (4) transportation-related capital improvement projects, such as the construction of roads, bridges, and bikeways.

³⁶ American Society of Civil Engineers, San Diego Section, *Preserving San Diego County Infrastructure – A Citizen’s Guide* (San Diego, CA: 2005).

³⁷ American Association of State Highway and Transportation Officials and TRIP, *Rough Roads Ahead* (Washington, D.C.: 2009), 27, and Government Finance Officers Association, *Best Practice: Preparing and Adopting Multi-Year Capital Planning* (2006), 1.

Figure 5: Detailed Transportation Budget, Fiscal Years 2004-2010*Millions of Dollars*

Category		2004	2005	2006	2007	2008	2009	2010	Total
Resurfacing	Asphalt Overlay	.0	1.4	1.8	12.3	16.2	10.4	46.9	89.0
	Slurry Seal	1.3	.8	1.6	6.0	7.7	10.8	15.5 ^b	43.8
	Total Resurfacing^a	1.3	2.2	3.4	18.3	23.9	21.2	62.4	132.8
GSD/Street Division - Operations & Maintenance	Electrical	9.2	9.5	11.0	11.5	12.5	12.8	12.2	78.7
	Management	2.8	3.1	3.2	3.1	2.8	4.8	5.1	24.9
	Roadways	13.5	9.1	9.6	10.1	13.0	9.9	9.3	74.7
	Storm Drains	11.6	6.9	7.1	7.1	2.7	-	-	35.4
	Traffic	5.1	8.6	8.1	3.8	5.6	4.2	7.9	43.4
	Trench Restoration	-	-	-	-	-	3.0	5.1	8.1
	Urban Forestry	5.6	8.8	8.3	9.1	11.2	5.5	4.4	52.9
	Total GSD Operations and Maintenance	47.9	46.0	47.3	44.8	47.9	40.2	44.0	318.1
Public Utilities	Water – Trench Restoration	-	0.6	0.6	2.6	3.1	1.7	2.1	10.7
	Wastewater – Trench Restoration ^c	-	-	-	1.0	-	0.5	-	1.5
	Total Public Utilities	-	0.6	0.6	3.6	3.1	2.2	2.1	12.2
E&CP/Transportation Engineering - Operations	Administration	0.1	0.3	-	0.5	0.4	0.2	0.2	1.7
	Bicycle Program	-	-	-	-	0.1	0.1	0.1	0.3
	Capital Improvements	0.5	-	-	-	-	-	-	0.5
	Program Management/Interagency Coordination	0.6	0.9	0.8	0.9	0.7	0.6	0.6	5.1
	Transportation Operations	2.6	2.7	2.9	3.0	3.1	2.8	1.5	19.6
	Red Light Photo Enforcement Program	-	1.3	1.5	1.5	1.5	1.5	1.5	8.8
	Traffic Safety and Information	0.9	0.9	1.0	1.1	1.1	1.3	1.2	7.5
	Transportation Alternatives Program ^d	0.6	0.6	0.6	0.7	0.7	0.7	0.6	4.5
	Transportation Systems & Programming	-	-	-	-	-	1.5	1.7	3.2
	Total E&CP Operations	5.3	6.7	6.8	7.7	7.5	8.7	8.5	51.2
Capital Projects	Streets & Bridges	129.8	95	99.1	-	93.0	125.8	54.3	597.0
	Bikeways	1.3	5.3	0.6	-	.3	2.3	1.6	11.4
	Traffic Control	7.3	6.2	4.6	-	4.1	4.6	2.4	29.2
	Total Capital Projects	138.4	106.5	104.3	85.0^e	97.4	132.7	58.3	722.6
Transportation Total		192.9	162.0	162.4	159.4	179.8	205.0	175.3	1236.9

Source: OCA analysis of Citywide budget data.

Note: Data represents budgeted amounts, except for Public Utilities which provided actual expenditures.

Totals may not add due to rounding.

^a We subtracted slurry seal from the Operations & Maintenance budget and asphalt overlay from the CIP budget to show total resurfacing.

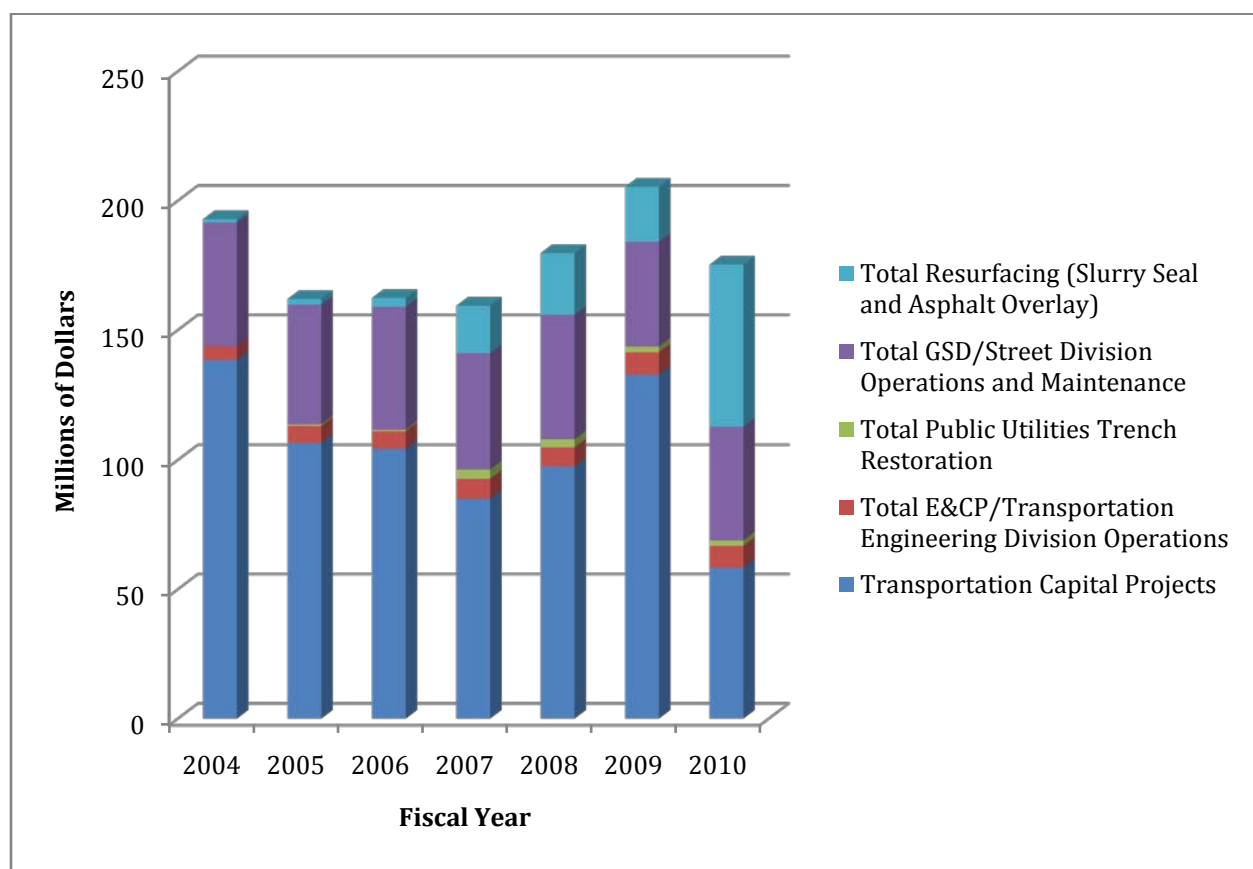
^b For fiscal year 2010, we are showing the anticipated rather than actual expenditures for slurry seal as the contracts have not yet been completed due to delays in receiving \$15.5 million in Proposition 42 funds.

^c Trench restoration for wastewater projects were included in the costs for repairs and could not be isolated as a separate costs item, so the numbers presented here are an underrepresentation of actual restorations.

^d For fiscal years 2009 and 2010, this program was in the Business Support Services Division.

^e The fiscal year 2007 budget did not break out budgets by category.

Figure 6: City's Transportation Budget, Fiscal Years 2004-2010



Source: OCA analysis of CIP and GSD/Street Division budget and resurfacing contracts.

Notes: Data represents budgeted amounts, except for Public Utilities which provided actual expenditures.

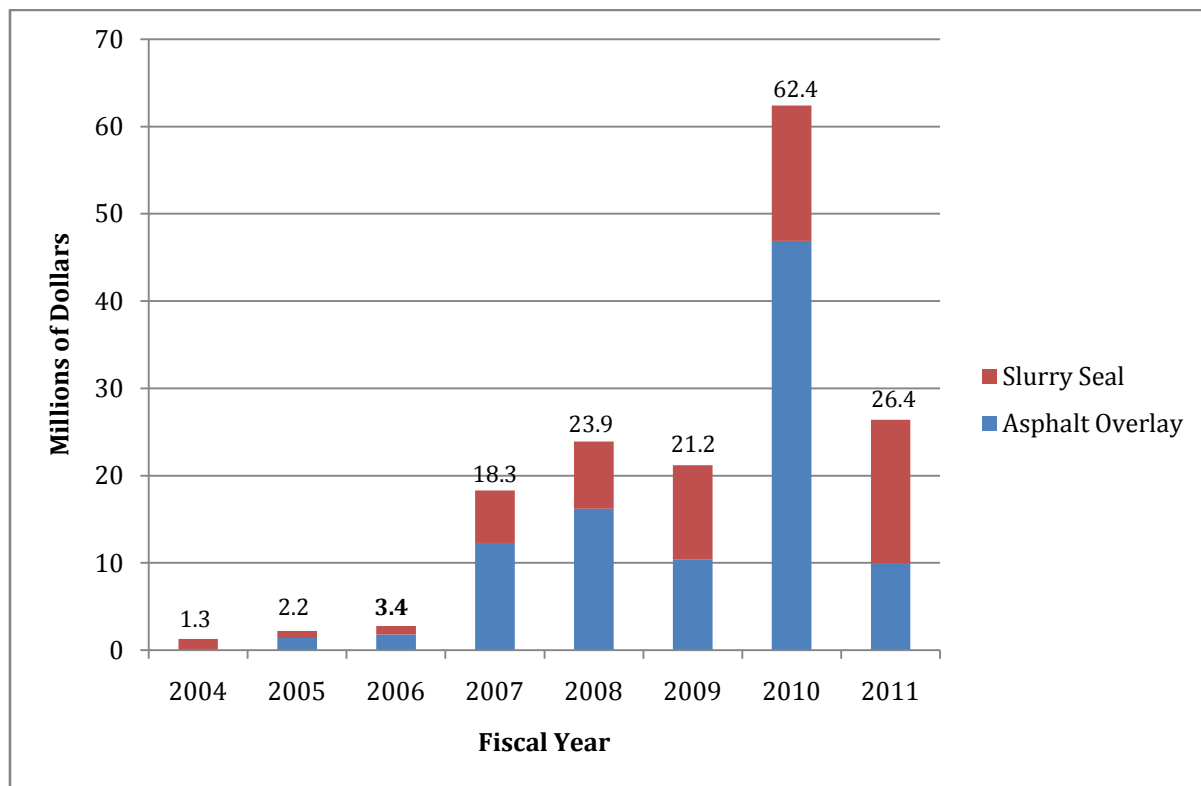
We subtracted slurry seal from the Operations & Maintenance budget and asphalt overlay from the CIP budget to show total resurfacing.

For fiscal year 2010, we are showing the anticipated rather than actual expenditures for slurry seal as the contracts have not yet been completed due to delays in receiving \$15.5 million in Proposition 42 funds.

Investment in resurfacing increased from \$1.3 million in fiscal year 2004 to \$62.3 million in fiscal year 2010. See figure 7. However, City officials told us that the fiscal year 2010 resurfacing budget was unusually high because it included Proposition 42³⁸ monies and (2) funds from the City's first deferred maintenance bond issuance. Due to delays in receiving Proposition 42 funds, resurfacing contracts will include about 56 percent fewer linear miles than originally anticipated in fiscal year 2010. City officials told us that the remaining contracts will be completed in fiscal year 2011.³⁹ The City did not allocate American Reinvestment and Recovery Act (ARRA)/TransNet funds for resurfacing, but placed about \$6.1 million—the maximum amount allowable under the TransNet ordinance—in reserve in case the state of California eliminated funds it provides to cities from the gasoline tax.⁴⁰

Figure 7: Total Resurfacing, Fiscal Years 2004-2011

Millions of Dollars



Source: OCA analysis of GSD/Street Division contracts and budget data.

³⁸ Proposition 42, a California constitutional amendment approved by the voters, requires that existing revenues resulting from state sales and use taxes be used for public transit and mass transportation, city and county street and road repairs and improvements, and state highway improvements. Cities receive about 20 percent of this amount which is generally in proportion to population.

³⁹ GSD/Street Division officials told us that Proposition 42 funds are received quarterly and will provide funds to slurry seal additional miles. This will go into construction as separate group jobs as part of fiscal year 2010 resurfacing contracts.

⁴⁰ The City exchanged ARRA funds with the regional transportation agency, SANDAG, for TransNet funds.

GSD/Street Division resurfaced about 756 miles or 28 percent of the City's 2,659 miles of asphalt streets from fiscal year 2004 through 2010. See figure 8. Consistent with dramatic budgetary increases for street resurfacing during this time period, the number of linear miles resurfaced increased from 27 in fiscal year 2004 to 281 in fiscal year 2010. Based on a condition assessment conducted on 52 percent of the City's asphalt streets in fiscal year 2007, the Division's data shows that 38 percent of streets are in good condition, 45 percent are in fair condition, and 17 percent are in poor condition. Officials estimate that the total resurfacing needed by the City to bring these streets to a medium level of repair—60 percent of streets in good condition, 30 percent in fair condition, and 10 percent in poor condition—is 566 linear miles per year or 386 miles of slurry seal and 180 miles of asphalt overlay. See figures 9 and 10. This would have required an additional investment of about \$112.5 million per year. GSD/Street Division has budgeted about \$26.4 million for resurfacing in fiscal year 2011.

Figure 8: Linear Miles of Streets Resurfaced, Fiscal Years 2004-2010

	2004	2005	2006	2007	2008	2009	2010	Total
Asphalt Overlay	0	7	4.5	28.4	20.5	35.4	134	229.8
Slurry Seal	27	19.5	20	102.3	95.3	115	147	526.1
Total Resurfacing	27	26.5	24.5	130.7	115.8	150.4	281	755.9

Source: OCA analysis of GSD/Street Division resurfacing contracts.

Note: For fiscal year 2010, we are showing the anticipated rather than actual number of linear miles slurry sealed as the contracts have not yet been completed due to delays in receiving Proposition 42 funds. As of August 2010, 27 of the anticipated 147 linear miles have been slurry sealed.

Figure 9: Requirements to Achieve Various Levels of Maintenance and Annual Requirements to Maintain Level Once Goal Is Achieved

Goal	Assumptions	Treatment	Requirements to Reach Goal		Annual Requirements ^a	
			Linear Miles	Cost (millions)	Linear Miles	Cost (millions)
Total Deferred Maintenance	<ul style="list-style-type: none"> 100 percent of streets will be in good condition. Slurry seal at years 5 and 10; overlay at year 15. 	Slurry Seal	1158	\$121.6	343	\$ 36.0
		Asphalt Overlay	438	\$175.2	172	\$ 68.8
		Total	1596	\$296.8 ^b	515	\$104.8
High Level of Maintenance	<ul style="list-style-type: none"> 75 percent of streets will be in good condition; 20 percent in fair condition; and 5 percent in poor condition. Slurry seal at years 5 and 10; overlay at year 15. 	Slurry Seal	644	\$ 67.6	343	\$ 36.0
		Asphalt Overlay	309	\$123.6	172	\$ 68.8
		Total	953	\$191.2	515	\$104.8
Medium Level of Maintenance	<ul style="list-style-type: none"> 60 percent of streets will be in good condition; 30 percent in fair condition; and 10 percent in poor condition. Slurry seal at years 7 and 14; overlay at year 21. 	Slurry Seal	386	\$ 40.5	245	\$ 25.7
		Asphalt Overlay	180	\$ 72.0	123	\$ 49.2
		Total	566	\$112.5	368	\$ 74.9
Low Level of Maintenance	<ul style="list-style-type: none"> 45 percent of streets will be in good condition; 40 percent in fair condition; and 15 percent in poor condition. Slurry seal at years 10 and 20; overlay at year 30. 	Slurry Seal	129	\$ 13.5	172	\$ 18.0
		Asphalt Overlay	52	\$ 20.8	86	\$ 34.4
		Total	181	\$ 34.3	257	\$ 52.4

Source: OCA analysis of 2007 condition assessment data provided by GSD/Street Division officials.

^a Annual requirements are based on a fixed maintenance schedule which is included under “Assumptions”.

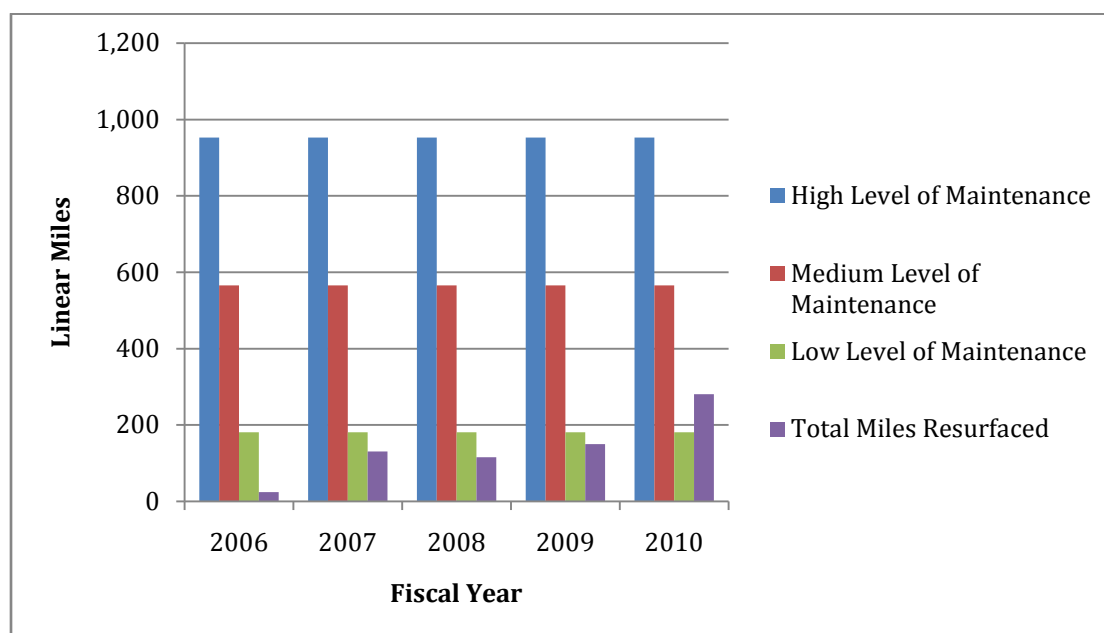
^b Total deferred maintenance is about \$377.5 million which includes the \$298.8 million for slurry seal and asphalt overlay requirements plus about \$80.7 million for the replacement of concrete streets.

Notes: Totals may not add due to rounding.

The data in this figure is based on a 2007 condition assessment of 52 percent of the City’s asphalt streets.

We excluded requirements for replacement of concrete streets.

Figure 10: Total Linear Miles of Streets that Required Resurfacing to Attain High, Medium, and Low Levels of Maintenance and Actual Linear Miles that Were Resurfaced, Fiscal Years 2006-2010



Source: OCA analysis of GSD/Street Division resurfacing contracts and estimates of resurfacing requirements provided by Department officials.

Note: For fiscal year 2010, we are showing the anticipated rather than actual number of linear miles slurry sealed as the contracts have not yet been completed due to delays in receiving Proposition 42 funds. As of August 2010, 27 of the anticipated 142.4 linear miles have been slurry sealed.

The City has not invested more in resurfacing because it faces tight financial constraints and competing funding priorities which limits the amount of monies available for resurfacing from its General Fund. According to City officials, funds available are not sufficient to meet the City's resurfacing needs in order to maintain streets to industry standards, and pavement is one of the few assets in the right-of-way that can be deferred. Due to safety concerns, funding for assets such as traffic signals and guardrails are the highest priority. Officials also told us that investment is limited because much of the funding that the City receives for transportation purposes is non-discretionary and has predetermined restrictions for its use.⁴¹ See figure 11. For example, only 30 percent of TransNet revenue can be used for street maintenance, and proceeds from deferred maintenance bonds can only be used for capital projects.⁴² However, the majority of funding sources may be used for capital projects, which includes asphalt overlay but not slurry seal.

⁴¹ Particularly due to the varying funding sources and their use restrictions, it is important to note that the City classifies slurry seal as street maintenance while asphalt overlay is considered to be a capital project.

⁴² The City was unable to issue bonds in public markets from 2004 until May of 2008 because Standard and Poor suspended its credit rating, because it could not evaluate the City's credit due to missing financial statements. Since the City's credit was restored, it issued its first deferred maintenance bond, a portion of which has been used for fiscal year 2010 asphalt overlay projects.

Figure 11: Transportation Funding Sources and Restrictions

	Funding Source	Description	Use Restrictions
Ongoing	TransNet Revenue	Revenues are generated by a one-half cent sales tax countywide to be used to fund improvements to the region's transportation system. The Congestion Relief Program provides funds to local agencies for local street and road improvements.	<ul style="list-style-type: none"> Maximum allowed for street maintenance is 30 percent. At least 70 percent of revenues to be used for capital improvements, including construction of new or expanded facilities and major rehabilitation or reconstruction of roadways.
	Regional Transportation Congestion Improvement Program Funds	This local fund is required by the TransNet program. Revenues are collected from private sector developers to offset the negative impacts of growth on congestion and mobility and must be used for improvements to the regional arterial system.	<ul style="list-style-type: none"> Restricted to capital projects.
	Proposition 42^a	Revenue generated by state sales tax on gasoline and diesel fuel sales tax are used for state and local transportation purposes to provide for improvements to highways, streets and roads, and transit systems. 20 percent is for use by California cities and allocated in proportion to population.	<ul style="list-style-type: none"> No restrictions for maintenance or capital projects. Money spent by the end of the fiscal year following the year in which the allocation was received.
	Gas Tax Allocation	Revenue generated by state excise tax on gasoline is for research, planning, construction, improvement, maintenance, and operation of public streets and highways (and related facilities for non-motorized traffic), including the mitigation of their environmental effects, the payment of property taken or damaged for such purposes, and necessary administrative costs.	<ul style="list-style-type: none"> No restrictions for maintenance or capital projects.
	Developer Impact Fees	Funds are collected in areas that are nearly built-out to mitigate the impact of new development.	<ul style="list-style-type: none"> Restricted to capital projects within a specific community where the funds are generated.
	Facilities Benefits Assessment Funds	Provides 100 percent funding for public facilities projects which serve a designated area of benefit.	<ul style="list-style-type: none"> Restricted to capital projects within the specific community where the funds are generated.
One-time	ARRA/TransNet	San Diego received about \$20.2 million in ARRA funds which was exchanged for TransNet funds with the regional transportation agency, SANDAG. About \$14 million was budgeted for transportation-related capital projects, such as a bikeway project and installing sidewalks, and about \$6 million is unprogrammed in case the state of California eliminated funds it provides to cities from the gasoline tax.	<ul style="list-style-type: none"> Same restrictions as TransNet.
	Proposition 1B	Proceeds from state general obligation bonds are be used for transportation projects that will assist in reducing local traffic congestion and deterioration, improving traffic flows, or increasing traffic safety. These may include street and highway maintenance, rehabilitation, installation, construction and reconstruction of associated facilities.	<ul style="list-style-type: none"> No restrictions for maintenance or capital projects. Funds must be expended within three fiscal years after the allocation.
	Deferred Maintenance Bond^b	Revenues from the City's bond sale were used for deferred maintenance capital projects including asphalt overlay and repairs and replacement of sidewalks, storm drains, and public facilities.	<ul style="list-style-type: none"> Restricted to capital projects.

Source: OCA analysis of funding source information.

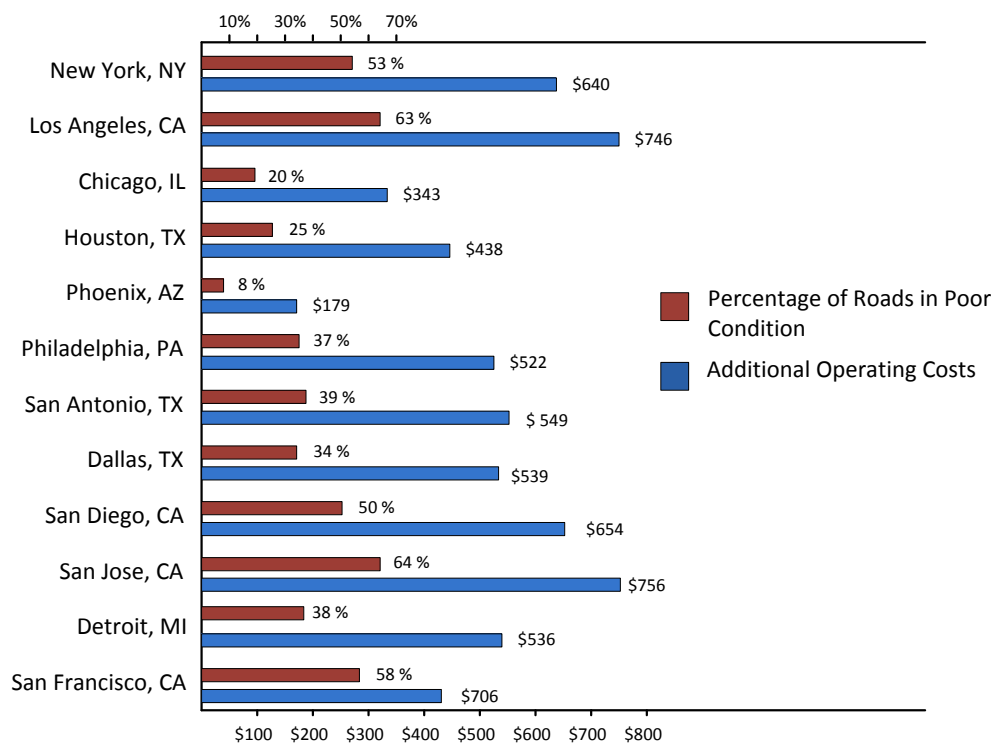
^a Proposition 42 funds have been eliminated for fiscal years 2010 and 2011 due to the California State Legislature's passage of the gasoline tax swap.

^b Although this is the City's first bond issuance for deferred maintenance, more bonds may potentially be issued in future years.

This limited investment in resurfacing has resulted in deferred maintenance and roads that are in poor condition. For example, GSD/Street Division estimated that the City has about \$377 million in deferred maintenance for street pavement and 17 percent of streets in poor condition with an OCI of 39 or less. In

addition, TRIP—a national transportation research group—recently evaluated the conditions of roads in the nation’s most populous urban areas based on the International Roughness Index and Present Serviceability Rating and found that 50 percent of the roads in San Diego and the surrounding suburbs are in substandard/poor condition.⁴³ See figure 12. These are roads and highways that provide an unacceptable ride and are in need of resurfacing or more significant repairs and cost motorists \$654 each annually in additional vehicle operating costs. According to the study, San Diego’s streets are the eighth worse in the nation. See appendix I for TRIP rankings. By not prioritizing and increasing investments in resurfacing, the City will pay more in the long run, both because lifecycle costs increase as the condition of streets deteriorate and poor street conditions increase vehicle operating costs.

Figure 12: Percentage of Roads in Poor Condition and Additional Annual Vehicle Operating Costs for 12 Most Populated U.S. Cities, 2008



Source: OCA analysis of TRIP data.

Note: The cities are shown in order of highest to lowest population.

⁴³ For this study, TRIP included condition data for all major urban arterial routes in the City and surrounding suburbs that are maintained by federal, state, or local governments, which includes a wide range of highways and roadways from Interstates to city streets with two or more lanes. TRIP obtained this condition data, which are the latest available, from the FHWA’s 2008 annual survey of state transportation officials on the condition of major state and locally maintained roads based on a uniform pavement rating index. While there may be some variance in how transportation officials apply these indices, the FHWA data are the only national source of pavement condition ratings based on a consistent criteria. The categories of ride quality, for example substandard/poor, are based on FHWA’s study that measured driver reactions to determine what level of road roughness was unacceptable to most drivers. TRIP, *Hold the Wheel Steady: America’s Roughest Rides and Strategies to Make our Roads Smoother* (Washington, D.C.: 2010), 2.

The City Has Not Comprehensively Managed Transportation Assets and Investments, but Plans to Consolidate Management Responsibilities in a New Transportation and Storm Water Department

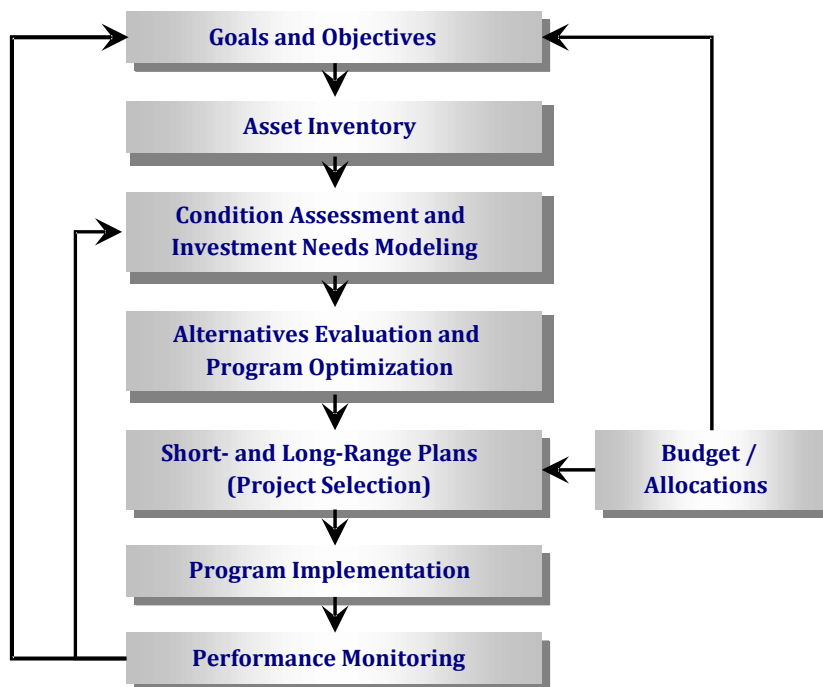
FWHA and industry leaders encourage state and local governments to use asset management—a strategic and systematic process of operating, maintaining, upgrading, and expanding transportation assets throughout their lifecycle.⁴⁴ True asset management considers the transportation system as an integrated whole and requires a comprehensive decisionmaking approach to transportation investment, including considering tradeoffs among modes and categories of investment.⁴⁵ See figure 13. Organizational integration is key to an asset management decisionmaking framework.⁴⁶ We found that the City has not taken a comprehensive approach to asset management and pavement preservation and other transportation responsibilities have been decentralized among various City departments. Based on our concerns and recommendations for improving coordination and integrating transportation functions, the City recently announced a plan to reorganize and consolidate transportation management functions under a new Transportation and Storm Water Department—an important step in implementing transportation asset management. We also found that GSD/Street Division has taken steps to apply asset management principles to its resurfacing and maintenance programs, for example, the Division contracted with a private expert to conduct a condition assessment of City streets.

⁴⁴ FHWA, *Asset Management Overview* (Washington, D.C.: Dec. 2007), 4, and *Rough Roads Ahead*, 29-30.

⁴⁵ *Transportation Asset Management Guide*, 4-7.

⁴⁶ U.S. Department of Transportation, *Asset Management Primer* (Washington, D.C.; Dec. 1999), 8.

Figure 13: Components of Transportation Asset Management



Source: FWHA and AASHTO.

City Has Not Taken Comprehensive Approach to Transportation Asset Management, but Plans to Integrate Transportation Functions in New Department

Asset management requires comprehensive coordination and communication and requires individuals to take an agency-wide rather than unit-specific view. Further, to effectively achieve the extensive coordination and resource allocation tradeoffs of asset management, a leadership structure needs to be in place. The City has not taken a comprehensive approach to managing transportation assets, because pavement preservation and other transportation responsibilities have been decentralized among various City departments. (See figure 14.) The various departments are functionally segregated with differing roles and responsibilities and no one department or leader has been accountable for ensuring that the resurfacing program is effective. For example, GSD/Street Division is responsible for the pavement preservation program; DSD issues excavation permits and collects fees from private entities; and E&CP inspects resurfacing projects and plans and manages capital transportation projects. Further, this decentralization of responsibilities has contributed to coordination and oversight challenges addressed throughout this report. For example, DSD has a key role for providing oversight and control of development and construction projects, but the Department does not maintain complete and accurate records. In addition, DSD's internal Project Tracking System (PTS) has limited capability to interface with the City's accounting system, for example, it provides the total amount of a daily deposit and does

not provide the capability to link fees with specific permits.⁴⁷ This issue is discussed in greater detail in finding 3 of this report.

Figure 14: City Departments' Responsibilities for Resurfacing and Capital Projects Conducted On or Below City Streets

Department/Division	Responsibilities Affecting Street Resurfacing
GSD Street Division	<ul style="list-style-type: none"> Obtains street condition assessment. Prioritizes and identifies streets to be resurfaced. Manages street resurfacing contracts. Conducts maintenance of streets and other right of way assets including street lights and traffic signals.
E&CP Right-of-Way Design Division	<ul style="list-style-type: none"> Manages the implementation of right-of-way and related horizontal CIP projects. Designs and provides project management for: <ul style="list-style-type: none"> Water and sewer pipelines Transportation and street-related projects Utilities undergrounding projects
Field Engineering Division	<ul style="list-style-type: none"> Provides construction management services for resurfacing contracts. Performs quality control and assurance via inspection of CIP projects. Conducts inspection of private land development for public infrastructure. Performs testing of construction materials.
Project Implementation & Technical Services Division	<ul style="list-style-type: none"> Manages CityWorks. Manages CIP transportation funds. Provides preliminary engineering services for all projects in the public rights-of-way. Reviews projects for compliance with Americans with Disabilities Act.
Transportation Engineering	<ul style="list-style-type: none"> Manages and coordinates planning, modeling, and efficient and safe operation of City's transportation system.
Stormwater	<ul style="list-style-type: none"> Maintains the storm drain system. Manages the City's efforts to reduce pollutants in urban runoff and storm water. Represents the City on storm water and National Pollutant Discharge Elimination System storm water permit issues and provides technical expertise and guidance to all City departments to ensure implementation and compliance with the permit.
DSD Building Construction & Safety Division	<ul style="list-style-type: none"> Reviews applications and issuing permits to private entities for work on or under streets. Collects applicable fees.
Neighborhood Code Compliance Division	<ul style="list-style-type: none"> Conducts site inspections to investigate allegations of unpermitted work and issues fines.
Public Utilities Department	<ul style="list-style-type: none"> Initiates water and sewer CIP projects. Conducts emergency repair and maintenance work on existing infrastructure. Conducts installation of new services and other work requested by homeowners and developers.
Purchasing & Contracting	<ul style="list-style-type: none"> Manages bid and award process for resurfacing and CIP contracts.

Source: OCA analysis of City budget and departments' documents.

⁴⁷ *Performance Audit of the City Treasurer's Delinquent Accounts Program: Development Services Department Deposit Account*, 17.

Effective management of all transportation assets requires that an agency develop performance goals that are credible and measurable, performance measures to monitor and report on progress toward goal achievement, and short- and long-term plans to prioritize and schedule projects.⁴⁸ A comprehensive, fully integrated asset management system integrates information on all asset inventories, conditions and performance databases, and alternative investment options.⁴⁹ We found that the various departments and divisions have established goals, performance measures, and in some cases plans related to their transportation assets or programs. For example, GSD/Street Division's goals and related performance measures are focused on safety, maintenance, and customer service. In addition, E&CP/Transportation Engineering Division has a five-year plan for TransNet projects and is involved regional transportation and congestion management planning. However, the various goals and plans of the departments/divisions are not integrated and the City does not have overall transportation goals or a comprehensive plan for its transportation assets. As a result, there has been limited horizontal coordination and little consistency with respect to investment procedures. Further, the City has not evaluated tradeoffs between various classes of assets, such as pavement versus bridges.

The City recently recognized the need for improvements in planning, coordination, and control of the various entities involved in work in the public right-of-way and announced a reorganization and consolidation of management functions related to transportation. The new Transportation and Storm Water Department will include street operations and maintenance, traffic/transportation engineering, and right-of-way planning and coordination and will be effective on January 1, 2011. This is an important step in addressing planning and coordination issues and provides an opportunity for the City to implement a comprehensive transportation asset management approach. Without a unifying organizational structure that encourages efficiency, collaboration, and proactive management of transportation assets, the City cannot make wise investments that result in improved services and greater cost effectiveness.

GSD/Street Division Has Applied Some Asset Management Principles

GSD/Street Division derives some benefits by applying asset management principles to its resurfacing and maintenance programs. For example, the Division is contracting with a private expert to assess the condition of all City streets—a process that requires specialized equipment and expertise. GSD/Street Division officials told us that pavement condition assessments are scheduled to be conducted every four years, since assets like pavement and bridges generally have a long service life and don't deteriorate at a rapid rate. The Division has allocated about \$500,000 for this study, which will include the entire network of streets and provide 360 degree digital roadway imaging. However, it will only assess two weighted factors—distress and ride⁵⁰—and will not include other street-related assets, such as traffic signals and sidewalks. A GSD/Street Division official told us that street lights and traffic signals are visually inspected as requested or when routine maintenance is performed. The City maintains sidewalks based on

⁴⁸ U.S. Department of Transportation, Federal Highway Administration, *Beyond the Short Term: Transportation Asset Management for Long-Term Sustainability, Accountability, and Performance* (Washington, D.C.), 8.

⁴⁹ *Asset Management Primer*, 22.

⁵⁰ The request for proposal states that surface condition will be assessed, including cracks, rutting, raveling, bleeding and roughness of the pavement surface.

California Streets and Highway Code, whereby the responsibility for maintaining sidewalks belongs to the adjacent property owner, with a few exceptions.⁵¹ If the City is aware of a problem and does not repair the sidewalk, it is liable for any resulting injuries or damages. However, in a recent audit of Public Liability, we found several cases where sidewalk hazards were reported but not corrected and citizens were subsequently injured.⁵²

GSD/Street Division also applies asset management principles with its maintenance management system—called Enterprise Asset Management—for the maintenance of infrastructure, such as replacing street and traffic lights and pothole repairs. For example, with this integrated GIS/SAP system, called SYNERGY, when Division staff receive a notification of an inoperable streetlight, they can pinpoint the location on a GIS map, and dispatch a technician. The City received a Technology Solution Award for 2009-2010 from the Public Technology Institute for this system's ability to account for and maintain its infrastructure.

FINDING 2 – COORDINATION AND PLANNING OF STREETS-RELATED WORK IS LIMITED

Public and Private Entities Are Excavating Newly Resurfaced Streets

Planning and coordination of all work on or under streets is critical to limit excavations—which will degrade and shorten pavement life—into newly resurfaced streets.⁵³ To ensure that such excavations are minimized, San Diego Municipal Code prohibits excavations into streets that have received asphalt overlay and slurry seal for three years and one year, respectively, with a few exceptions, such as emergencies, the installation of new services, and nonlinear excavations.⁵⁴ We found that about 18 percent or 7 of our sampling of 40 streets that were resurfaced during fiscal year 2009 were excavated by City departments or private entities during the moratorium period. See figure 15 and appendix II. Although all of these cases were excavated for reasons allowed in the Municipal Code, we believe that effective planning and coordination of this work would have enabled the City to avoid excavations in newly resurfaced streets and leverage resources for resurfacing. For example, about four months after Santa Monica Avenue was slurry sealed in May 2009, the Public Utilities Department excavated the street to upgrade a customer's water meter as part of the requirements of a building permit issued in February 2009 per added water demand. See figure 16.

⁵¹ The City is responsible only for sidewalk damage caused by its operations of assets, such as damage caused by City-owned trees. *California Street and Highway Code, Sections 5610-5618.*

⁵² OCA, *Performance Audit of Risk Management's Public Liability and Loss Recovery Division: Significant Opportunities for Improvements Exist to Mitigate Public Liability Claims and Maximize Loss Recovery Efforts* (San Diego, CA: Aug. 2010).

⁵³ County of San Diego, Department of Public Works, *Pavement Cut Policy*, POL-RO-7 (San Diego, CA: Dec. 4, 2008), 1, and *City of Palo Alto Municipal Code § 12.10.010.*

⁵⁴ *San Diego Municipal Codes §62.1203 and §62.1204.*

Figure 15: Streets Excavated During Moratorium

Sample Number	Location	Treatment	Observations	Conclusions
9	Pallux Way (from Virgo Place to Borealis Road)	Asphalt Overlay	Three 4 feet-by-4 feet trenches on fresh overlay.	<ul style="list-style-type: none"> Nonlinear cuts used, so in compliance with moratorium. No record of excavations.
20	Santa Monica Avenue (Sunset Cliff Blvd to Cable St)	Slurry Seal	Water trench on fresh slurry seal.	<ul style="list-style-type: none"> Installation of new service, so in compliance with moratorium. New service could have been installed prior to slurry seal if department had coordinated work.
5	Hartford Street (Milton St to Clairemont Dr)	Asphalt Overlay	One 8 feet-by-8 feet trench on fresh overlay.	<ul style="list-style-type: none"> Public Utilities Department thought this was an emergency based on resurfacing contractor's report of a sunken trench; however, no problem was found after excavating the street.
31	Hamilton Street (University Ave to Lincoln Ave)	Slurry Seal	One lane not slurry sealed.	<ul style="list-style-type: none"> Emergency, so in compliance with moratorium. Lane was not slurry sealed to allow Public Utilities Department to fix main break which was reported on April 28, 2009.
34	Manzinita Dr* (Heather St and Glenfield St)	Slurry Seal	DigAlert markings on fresh slurry.	<ul style="list-style-type: none"> Street was marked out but not excavated at time of observation.
16	Buho Court (Papagallo Ct to End)	Slurry Seal	Trench at beginning of cul de sac on fresh slurry	<ul style="list-style-type: none"> Emergency, so in compliance with moratorium. Public Utilities Department fixed a polyethylene pipe that broke and replaced it with copper.
18	Overlake Avenue (Ridgemoor Dr and Glenlea Lane)	Slurry Seal	One 6 feet-by-6 feet trench over new slurry next to water meter	<ul style="list-style-type: none"> Emergency, so in compliance with moratorium. Private utility struck a stiffed service pipe^a because the City did not mark out its location. City fixed sunken trench. Private utility refused to pay for damage and faulted the City.

Source: OCA analysis of GSD/Street Division asphalt overlay and slurry seal sample.

^a A stiffed service pipe is abandoned, but remains pressurized to allow for a future reconnection to a meter.

Figure 16: Santa Monica Avenue Excavation during Slurry Seal Moratorium



Source: OCA photograph.

We also identified cases where emergency trenching into newly resurfaced streets could have been avoided if departments better planned and coordinated maintenance and resurfacing work. For example, shortly after Buho Court was resurfaced as part of the fiscal year 2009 slurry seal contract, a polyethylene pipe burst and emergency trenching was required. See figure 17. The Public Utilities Department has an ongoing maintenance program for replacing polyethylene pipes—a material that is no longer approved for use due to the high instance of breakage and leaks—with copper pipes. However, the Department reactively replaces pipes when they break rather than planning in advance, which could reduce costs and work. For example, the departments could have coordinated the work in advance and shared the cost of resurfacing the street before the pipe broke. Public Utilities Department officials told us that they did not include funding in their rate case for the proactive replacement of polyethylene lateral pipes and until they have a plan for doing this, it is not possible to coordinate work on these assets.

Figure 17: Buho Court during Asphalt Overlay Moratorium



Source: OCA photograph.

We also found cases where nonlinear cuts, which are allowed by Municipal Code, were made into resurfaced streets during the moratorium period. For example, in November 2009, we observed three 4-foot by 4-foot utility trenches on Pallux Way which was overlaid in July 2009. See figure 18. GSD/Street Division officials told us that they did not have any information on these trenches, and DSD officials did not have a record of a permit even though permits are required for all excavations.

Figure 18: Pallux Way Excavations during Asphalt Overlay Moratorium



Source: OCA photograph.

Excavations were made into newly resurfaced streets for three reasons. First, City departments are not required to plan citywide excavation work or share their street resurfacing plan with other departments and private entities in advance. Using the CityWorks geospatial imaging system to coordinate capital improvement projects is the only established procedure for coordination among the departments. GSD/Street Division officials told us that they diligently review CityWorks and print out records of maps to show that they have checked for conflicts between resurfacing and other maintenance projects. According to officials, they maintain this level of record keeping to substantiate that they did not identify any conflicts. Officials also told us that, when a conflict is identified, the utility becomes responsible for resurfacing the impacted streets and a new street(s) is selected for resurfacing.

Reliance on CityWorks is problematic because the 10-year old system has significant limitations, including outdated information, slow response time, and inability to identify project conflicts. E&CP officials told us that they are working with the City's information technology contractor to address these limitations, and the improved system should be available for use in the fall of 2010. However, officials also said that its success will depend upon whether project managers input up-to-date project information into the system in a timely manner as this has been a problem in the past.

Second, excavations were made into newly resurfaced streets because City departments do not obtain permits for work conducted on or under streets similarly to private entities.⁵⁵ This is intended to provide some degree of oversight, because DSD is supposed to check for project conflicts before issuing permits. As discussed above, City departments are relying on CityWorks to check for conflicts. Third, excavations were made into resurfaced streets because the Municipal Code allows any entity to make nonlinear cuts into pavement or use trenchless technologies, such as drilling or boring holes, even during the moratorium.⁵⁶ Research shows that both linear and nonlinear excavations degrade and damage pavement no matter how well cuts are repaired, because the impact extends beyond the location of the excavation.⁵⁷ Further, research shows that trenchless technologies may cause soil and pavement subsidence and result in damage to existing utilities.⁵⁸

In response to our survey of private sector utilities that have franchise agreements with the City or State of California and conduct business in San Diego, representatives told us that the City's lack of advanced

⁵⁵ San Diego Municipal Code §62.1205 requires that all public utilities—defined as wet and dry utilities, including City departments and corporations that provide telecommunications, energy, water, gas, bridge, pipeline, and sewer services—obtain a permit to excavate. See also California Public Utilities Code Section 216. However, City departments are not required to obtain right-of-way permits per San Diego Municipal Codes §129.0702 -§129.0703.

⁵⁶ *San Diego Municipal Codes* §62.1202-62.1204.

⁵⁷ City of Santa Ana, *Streets & Technology Conference* (Santa Ana, CA.: Feb. 2000), 10, and Tarakji, Ghassan, *The Effect of Utility Cuts on the Service Life of Pavements in San Francisco, Volume 1: Study Procedure and Findings* (San Francisco, CA.: May 1995), 10, and Wilde, W. James, Grant, Carolyn, and White, George T., *Controlling and Reducing the Frequency of Pavement Utility Cuts* (Houston, TX.: 2003), 11.

⁵⁸ Abraham, Dulcy, Baik, Hyeon Shik, and Gokhale, Sanjiv, *Development of a Decision Support System for Selection of Trenchless Technologies to Minimize Impact of Utility Construction on Roadway* (West Lafayette, IN.: Aug. 2002), 19.

coordination and planning of work limits their company's ability to redesign and reschedule work to avoid conflicts before plans are finalized. They also told us that when plans are submitted by the City, delays in the submittals also delay their projects. Based on our review of street resurfacing practices in other cities, we found that those with a high percentage of roads in good condition, such as Portland, OR, and Atlanta, GA,⁵⁹ require (1) a citywide 24-month excavation plan for all maintenance work, (2) a 12-month resurfacing plan to be shared with public and private entities doing street-related work, and (3) both private entities and city departments to apply for a permit to excavate in the public right-of-way. Without this level of planning and coordination of citywide maintenance that impacts streets, continued excavations into newly resurfaced streets will degrade pavement conditions, increase lifecycle costs of streets, and reduce the City's ability to leverage resources and obtain the return on investment.

City Resources Are Not Being Leveraged for Underground Service Alert Notifications

Coordination among the various departments that conduct work on or under streets is also important for leveraging the City's limited resources. The Underground Service Alert—a regional center—notifies subsurface installation owners when an excavator is planning to conduct work in their area so they can mark out subsurface installations on the pavement. The center charges members \$1.50 per email notification. We found that both GSD/Street Division and the Public Utilities Department subscribe to this service which generally cost the City \$57,674 annually. Public Utilities Department officials told us that they maintain separate accounts because the notifications go to two separate locations which are managed by different departments. However, an Underground Service Alert representative told us that the City could establish one subscription and email account to receive notifications and all relevant departments could have access to this account, saving the City approximately \$27,000 annually.

GSD/Street Division and the Public Utilities Department have duplicate subscriptions for this service because the various departments that conduct work on or under streets are functionally segregated with differing roles and responsibilities and no one department or leader is accountable for ensuring that work is coordinated and resources are leveraged. Without proactive management of transportation resources and an organizational structure that encourages efficiency and collaboration across departments, the City cannot take advantage of efficiencies provided through interdepartmental coordination planning.

FINDING 3 –CITY LACKS OVERSIGHT OF PRIVATE ENTITIES' EXCAVATION OF STREETS

DSD Lacks Complete Information on Right-of-Way Permits Issued to Private Entities during the Moratorium Period

Before beginning any street excavation, private entities are required to obtain a permit and pay an excavation fee.⁶⁰ During the moratorium period after streets have been resurfaced, DSD can grant a

⁵⁹ 75 percent of Portland's roads and 90 percent of Atlanta's roads are in good or fair condition. *Rough Roads Ahead*, 36.

⁶⁰ *San Diego Municipal Code* §62.1205.

written waiver for the moratorium requirement and allow excavation for the following cases: (1) emergencies, (2) new service, (3) installation relocation, and (4) non-linear excavations.⁶¹ We conducted a sampling of 15 right-of-way permit applications with moratorium conflicts submitted to DSD by private entities from fiscal years 2007 through 2009. Permits were issued for 2 of 15 or about 13 percent of our sample even though a moratorium conflict was identified. For example, a private company excavated 1st Avenue using nonlinear trench cuts three times during the three-year moratorium period since the street received asphalt overlay in 2006. See figure 19. We could not determine if permits issued by DSD were in accordance with moratorium requirements, such as receiving a waiver for new service installations, because DSD does not require that this information be recorded in its Project Tracking System (PTS). DSD officials told us that they have provided written and oral waivers to some private entities, waivers are included in the approval of project plans, and hard copy notes are put on the project file. However, the department has not maintained electronic or tabulated records of these waivers. An official told us that the Department plans to require that waivers be recorded in PTS in the future so that E&CP/Field Engineering is notified that a waiver of the moratorium has been granted and can conduct necessary inspections. DSD's lack of easily accessible records and information on which companies have received waivers makes it very difficult to hold private entities accountable for trench restoration work by reducing the City's ability to conduct post-construction inspections.

Figure 19: 1st Avenue Excavation during Asphalt Overlay Moratorium



Source: OCA photograph.

We also found two cases where contractors used nonlinear or lateral trenches after DSD advised them that a moratorium conflict existed. As discussed earlier in this report, nonlinear technologies have a similar degradation effect on streets as linear excavations and should not be excluded from moratorium requirements. Private entities are not complying with City permit requirements because, the City lacks a reliable and consistent enforcement mechanism and penalties for noncompliance are not stringent enough to deter private entities from conducting unpermitted work. DSD relies on public complaints or referrals

⁶¹ *San Diego Municipal Code §62.1203-62.1204.*

from City departments, such as E&CP/Field Engineering inspectors who do not have resources to monitor unpermitted work, to notify its Neighborhood Code Compliance Division when work is being conducted without a permit.⁶² An official told us that DSD pursues an average of four to five complaints per year. Penalties for noncompliance range from \$50 to \$200 per day if the responsible parties fail to obtain permits. DSD officials told us that this situation will be remedied when E&CP begins using DSD's PTS.

In addition, we believe that DSD's lack of records and information on which companies have received waivers makes it very difficult to hold private entities accountable for trench restoration work by reducing the City's ability to conduct post-construction inspections. By not assigning responsibility and accountability for ensuring compliance, establishing stringent penalties to deter unpermitted excavations, and maintaining complete and accurate records of waivers, the City will continue to lack oversight and control of private entities excavations into streets. This degrades the overall service life of the City streets and places the burden of maintaining streets on the taxpayers rather than the responsible private entities.

DSD's Collection of Excavation Fees Has Significantly Declined and Complete and Accurate Information on Permits Is Not Readily Available

San Diego Municipal Code requires that excavation fees be deposited into a designated fund and used to repair pavement problems within the associated area.⁶³ As an alternative to paying excavation fees, private entities can choose to execute either a warranty or a resurfacing agreement with the City.⁶⁴ The Municipal Code requires that the City establish official warranties with the private entities in order to ensure that the City is protected against liability.⁶⁵ DSD collects most fees prior to issuing permits and deposits these into a revenue account. We found that the revenue account for excavation fees declined by 98 percent from fiscal year 2005 to 2010. See figure 20.

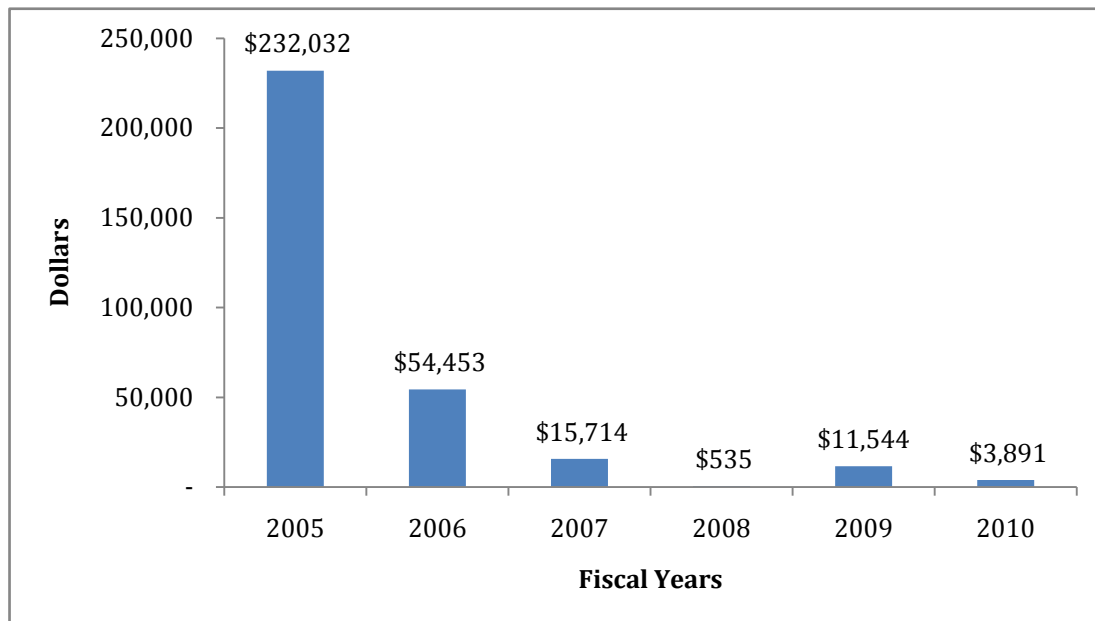
⁶² City officials told us that they inspect all permitted and CIP work after the work is completed and before it is accepted.

⁶³ *San Diego Municipal Code §62.1210.*

⁶⁴ A warranty is a written agreement in lieu of paying a fee which requires that the entity resurface the street. *San Diego Municipal Code §62.1207 and §62.1205(d)(1)-(d)(3).*

⁶⁵ *San Diego Municipal Code §62.1207(b)(2)*

Figure 20: Excavation Fees Collected by DSD, Fiscal Years 2005 –2010



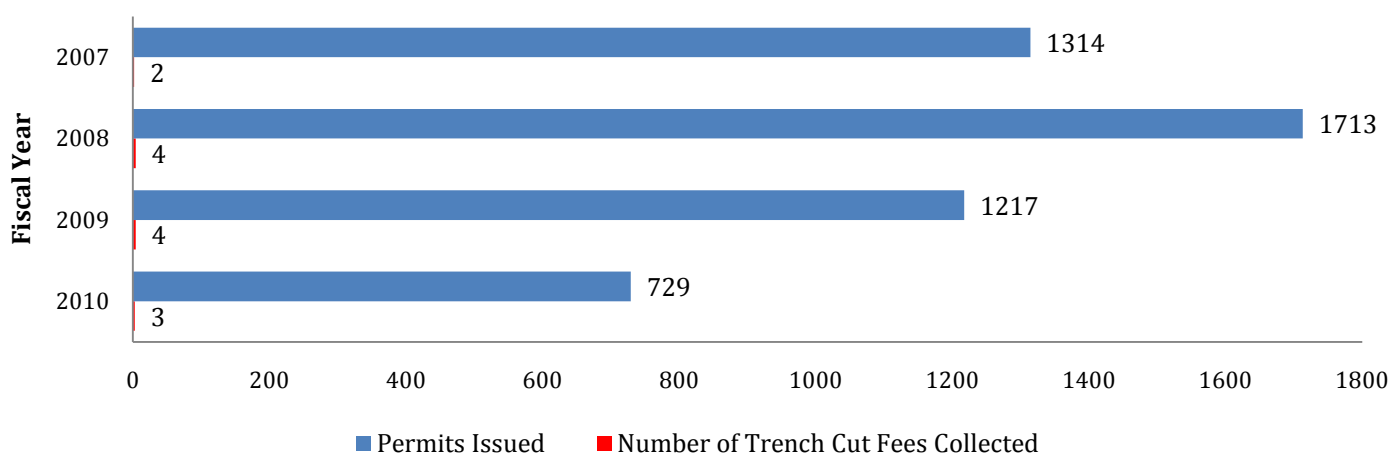
Source: OCA analysis of DSD accounting data.

DSD officials told us that the excavation fees collected significantly declined during this time period for three reasons. First, private entities have exercised the warranty option and are responsible for resurfacing the public right-of-way in lieu of paying a fee. DSD does not maintain records of warranties so we could not assess the extent to which they are used. According to DSD officials, only AT&T, SDG&E, Cox Communications, and Time Warner Cable are considered to have warranties and DSD still requires permits to track excavations so that E&CP can enforce the warranties. Maintaining records of warranties and communicating this information to E&CP/Field Engineering Division is important so that the Division has the necessary information to enforce warranty requirements. Without providing written formal warranties and maintaining accurate records, the City is not protected against liability for third-party damages resulting from trench repairs, and it cannot enforce or seek damages when private entities do not repair the street to appropriate standards.

Second, DSD officials told us that fees have decreased during this time period because private entities have adapted to locating their trenches out of the public rights-of-way or used nonlinear excavations or trenchless technologies, such as micro trenching or boring, which are exempt from the fee. As discussed earlier in this report, although the Municipal Code allows these options, they can have a similar degradation effect as other excavations and this circumvents the intent of the moratorium. Third, DSD has experienced a significant reduction in all development activity over the past three years due to the economic recession. The number of right-of-way permits that DSD issued has declined by 45 percent since fiscal year 2007.

DSD did not provide timely or sufficient evidence so that we could reconcile right-of-way permits issued with trench cut fees collected, therefore we could not substantiate whether DSD is effectively performing these functions. See figure 21. While all of the right-of-way permits that were issued during this time period do not require payment of trench cut fees, we believe the data is incomplete. For example, almost \$16,000 was collected in fiscal year 2007 (see figure 20); however, the data provided by DSD shows that only 2 fees were collected during that time period out of 1314 permits issued. We believe that reconciling permits and fees and making this information readily accessible would improve transparency and accountability.

Figure 21: Right-of-way Permits Issued and Trench Cut Fees Collected by DSD, Fiscal Years 2007 –2010



Source: OCA analysis of DSD right-of-way permit and trench cut fee data.

Note: We could not include information prior to September 2007 because DSD did not have comprehensive electronic records of permits before converting from a paper tracking system.

Issuing permits and collecting fees is key to providing oversight and control of development and construction projects in the City and an integral component in managing transportation assets. We recently reported that PTS does not interface with the City’s accounting system and cannot be accessed outside of the Department and recommended that DSD implement system interfaces.⁶⁶ According to DSD officials, PTS does interface with the City’s accounting system and any department can be given access if requested. However, we were not provided access to PTS and had to rely on a DSD analyst to provide permit information to us. Therefore, we cannot verify its validity. Additionally, we faced challenges in determining whether DSD was appropriately issuing permits and collecting fees prior to September 2007 because it did not have comprehensive electronic records of excavation or rights-of-way permits issued

⁶⁶ *Performance Audit of the City Treasurer’s Delinquent Accounts Program: Development Services Department Deposit Account*, 17.

before they converted from a paper tracking system to their internal PTS.⁶⁷ Further, while PTS interfaces with SAP, this is limited to depositing developer payments that have been invoiced and received in PTS into the correct revenue accounts by fee type. This interface capability only provides the total amount of a daily deposit and does not provide the capability to link fees with specific permits. Officials told us that PTS links permits with fees but does not report out to SAP at that level. In addition, we recently reported that DSD relies on an outdated City billing process and has a decentralized and largely manual process for managing its deposit accounts which resulted in \$3.4 million in unpaid fees as of June 30, 2009.⁶⁸ Officials told us that these recommendations are being implemented, but have not provided substantiating evidence as of our last recommendation follow up report in July 2010. Without effective and efficient permit issuance, the City is not overseeing and coordinating work done on or under streets by private entities resulting in increased excavations and degradation of streets. By not collecting fees, the City is losing much needed revenue to maintain and repair streets.

Excavation Fees Are Based on 2003 Costs

Excavation fees, established to mitigate the damage and degradation that excavations caused to pavement, should be reviewed and adjusted periodically to ensure full cost recovery for ensuing pavement repairs.⁶⁹ We found that excavation fees currently being charged may not sufficiently cover the cost of pavement degradation due to trenching. This has occurred because fees have not been reviewed and updated or revised since the schedule was established in 2003, so fees are based on 2003 costs.⁷⁰ The producer price index for highway and street construction increased by 58 percent from 2003 through 2010.⁷¹ Without charging an appropriate fee to excavators, the City is losing revenue and missing an opportunity to recover damages to its assets, and taxpayers will subsidize the trenching of the City streets by private entities through higher resurfacing costs.

⁶⁷ DSD transitioned rights-of-way permits into PTS—an internally-created database—from July 2005 through September 2007. Data is inconsistent during this time period since some permits were tracked in PTS and others were tracked manually.

⁶⁸ Office of the City Auditor, *Performance Audit of the City Treasurer's Delinquent Accounts Program: Development Services Department Deposit Accounts* (San Diego, CA: Dec. 2, 2009), 8-9.

⁶⁹ City Council Resolution Number R-298358; *San Diego Municipal Code* §62.1201, §62.1205(d)(1)-(d)(3), and §112.0201.

⁷⁰ A DSD official told us that DSD plan check and permit fees were updated in fiscal year 2008 but this excludes fees that are the responsibility of other departments, such as excavation (GSD/Street Division) and inspection fees (E&CP/Field Division).

⁷¹ The producer price index is calculated by the U.S. Bureau of Labor Statistics and measures the average change over time in selling prices for materials and supplies. The fiscal year 2010 index covers prices through June 2010.

City Departments and Private Entities Are Not Restoring Streets to an Acceptable Level

San Diego's Municipal Code requires that (1) private entities that have excavated in the public rights-of-way restore damaged pavement with surfacing material that matches the surface and structural strength of the adjacent surface and (2) sanctions the use of random inspections of completed restorations.⁷² We found that 40 percent or 6 of the 15 streets that we sampled were not restored properly and exhibited cracking, failing trenches, and uneven patchwork. For example, a private company excavated University Avenue in 2009 without a permit and did not properly raise sewer manhole covers before restoring the trench. This resulted in pavement failure and cracking near one manhole and left an uneven trench across three lanes from another. See figure 22.

Figure 22: University Avenue Manholes after Trench Restoration



Source: OCA photograph.

Private entities are not properly restoring trenches for two reasons. First of all, the City lacks the (1) requirements to ensure compliance to acceptable standards and (2) sufficiently stringent requirements for restoring streets to reduce the deteriorating effects of the excavation, such as curb-to-curb resurfacing. Research shows that there will be pavement damage beyond the area of excavation no matter how well the trench is restored and the only way to mitigate that damage is by applying a thicker layer of asphalt beyond the area of the trench base.⁷³ Secondly, San Diego Municipal Code does not require inspection of all pavement restoration work done by private entities and instead allows random inspections.⁷⁴ In 2006, a Grand Jury found that the City did not follow policies and procedures to regularly inspect trenching by private entities unless a citizen placed a complaint.⁷⁵ E&CP/Field Engineering officials told us that they prioritize inspections based on staff availability and risk factors related to the magnitude of work being conducted. By not providing the requirements to ensure compliance to acceptable standards and requiring

⁷² *San Diego Municipal Code §62.1108- §62.1109.*

⁷³ *Santa Ana Streets & Technology Conference, 2000; Tarakji, Ghassan, The Effect of Utility Cuts on the Service Life of Pavements in San Francisco, Volume 1: Study Procedure and Findings* (San Francisco, CA.: May 1995), and Wilde, W. James, Grant, Carolyn, and White, George T., *Controlling and Reducing the Frequency of Pavement Utility Cuts* (Houston, TX.: 2003).

⁷⁴ *San Diego Municipal Code §62.1108- §62.1109.*

⁷⁵ San Diego County 2006 Grand Jury 2005-2006 (filed April 6, 2006).

excavators to restore streets to these standards, streets will deteriorate at a faster rate and taxpayers will pay the cost for maintenance and repairs rather than the responsible private entities.

OTHER PERTINENT INFORMATION

Departments Did Not Coordinate Cost Estimates and Contract Execution

GSD/Street Division performs site assessments of street conditions prior to finalizing annual resurfacing contracts to ensure that data is accurate. These are important since 48 percent of street condition data was last updated in 2007 and 52 percent was updated in 2003.⁷⁶ According to Division officials, these assessments are critical to ensure that the street is inspected before it is added to a resurfacing contract. Site assessments provide the basis for cost estimates, for example, for the amount of materials required. Based on these assessments, GSD/Street Division determines whether to mill and pave streets between 2 and 4 inch thickness—a range established in public works standards.⁷⁷ E&CP/Field Engineering officials, who provide construction management services for resurfacing contracts, told us that they modified the slurry seal contract in July 2009 midway through project completion because GSD/Street Division had underestimated the amount of asphalt needed to mill and pave the streets for slurry seal on the contract by 2,346 tons. This represents about a 30 percent difference in quantity. To avoid going over the budgeted contract cost, E&CP negotiated with the contractor to reduce the mill and pave thickness from 4 to 2 inches, and GSD/Street Division reduced the amount of linear feet of streets being slurry sealed on this contract by about 6 percent.⁷⁸ City officials told us that estimates are not perfect and are approximations based on the available information, and the streets removed from this contract were included in a subsequent contract. Without a timely and thorough site assessment, GSD/Street Division cannot ensure that its estimates are as accurate as possible and that the City is getting the durability, service life, and amount of work expected. Further, given the departments' differing responsibilities for street resurfacing, without effective coordination, they cannot successfully execute contracts.

Conclusions

Providing well maintained streets for citizens is essential to reduce vehicle operating costs and traffic congestion and enhance public safety and satisfaction. Investing in transportation infrastructure also helps drive economic growth—goods and services flow, productivity increases, businesses are competitive, and jobs are created. As San Diego continues to face budgetary and resource pressures, investing our limited resources cannot be left to an arbitrary process that fails to look at the larger picture and possible long-

⁷⁶ Officials told us that condition assessments on facilities, streets, bridges, and other capital assets are normally conducted every five to ten years and considered to be valid and accurate for their intended purposes until the next assessment is conducted.

⁷⁷ According to E&CP/Field Engineering officials, these standards provide City engineers with parameters to determine how thick to mill and pave streets in order to achieve repairs without impacting the base of the street.

⁷⁸ The contractor is paid per ton of asphalt. Decreasing the amount of asphalt that the City purchased when reducing pavement thickness from 4 to 2 inches required an increase in the contractor's fixed costs by \$152,047 to ensure that he received the total payment originally agreed upon in the contract.

term consequences. It is crucial that decision makers understand the importance of timely pavement maintenance and preservation and the consequences that inadequate funding in these areas will further deteriorate pavement conditions and cost the City more in the long run. The goal is to educate policymakers about the infrastructure investments needed to provide San Diego with a seamless transportation system and ensure a dedicated, stable funding source for maintaining the system. The success of the system will be dependent on the commitment by policymakers, management officials, and the public to shift to a proactive, comprehensive, and long-term asset management approach.

Asset management helps transportation agencies to identify program needs and provides the tools to reach defensible decisions that maximize transportation investments. Establishing an organizational structure that will encourage collaboration and coordination for all aspects of transportation assets and a leader to advocate for effective investment in pavement preservation is a critical first step to implementing asset management. Further, effective asset management requires comprehensively assessing street conditions; developing long- and short-term plans to resurface the right pavement with the right treatment at the right time; and measure performance. Without effective asset management, the program will continue to lack transparency and accountability and the City will not obtain the best return on its investment in transportation assets.

Recommendations

We are making 14 recommendations to improve planning, coordination, and oversight and the City's management of transportation assets. We have assigned priority numbers to these recommendations to provide the Administration with implementation targets. See appendix III for the recommendation priority guide.

Finding 1

To improve planning and management of transportation assets and enhance coordination, accountability, and transparency over the City's investment, we recommend that the Chief Operating Officer and Deputy Chief Operating Office for Public Works: (*Priority 2*)

1. assess the most effective organizational structure to manage the City's transportation functions that will improve efficiency, enhance collaboration, and allow the new Department to implement transportation asset management;
2. appoint a leader to advocate for transportation asset management and investment; and
3. begin to take steps to implement transportation asset management, including:
 - setting well-defined policies and goals;
 - establishing and reporting on performance measures;

- developing short- and long-term plans for transportation assets where the City lacks plans—such as for resurfacing, clarifying and enhancing existing plans, integrating all transportation-related plans, and making these available to the public, for example via the Department’s website; and
- annually reporting the City’s various investments in transportation, including capital projects and maintenance.

Finding 2

To improve coordination and planning and increase efficiencies of street-related projects, we recommend that the Chief Operating Officer and Deputy Chief Operating Officer for Public Works require that City departments: *(Priority 2)*

4. develop a 24-month Citywide excavation plan for all maintenance work and share this plan with other departments and relevant private entities to prevent and/or resolve to the extent possible conflicts involving planned projects;
5. develop and implement a documented process for ensuring that City departments and private entities comply with trench cut requirements and identify conflicts in a more timely manner, including establishing policies and procedures and internal controls;
6. develop suggested changes to the San Diego Municipal Code for holding nonlinear cuts into pavement or the use of trenchless technologies to the same requirements as linear trench cuts during the moratorium period; and
7. establish one Citywide subscription and email account for Underground Service Alert notifications within City limits that can be accessed by all relevant departments.

Finding 3

To improve oversight and coordination of work performed by private entities on or under City streets and ensure that streets are restored to an acceptable standard, we recommend that City Management conduct an evaluation and make recommendations to the City Council to: *(Priority 2)*

8. establish written policies and procedures and internal controls for inspections of work performed by private entities to ensure compliance with permit requirements;
9. revise City standards for trench restoration to establish more stringent requirements and ensure that public and private entities restore streets to an acceptable level, such as resurfacing curb to curb; and
10. enforce the formal, specific trench repair requirements and establish stringent penalties for unpermitted work, which
 - fully cover the cost of current and future degradation,
 - are based on current costs and updated annually,
 - incentivize public and private entities to coordinate street excavations.

To improve transparency and accountability of the issuance of permits and collection of excavation fees, we recommend that the Director of DSD: *(Priority 2)*

11. require written and complete records of in lieu warranties and moratorium waivers and other information that is needed by E&CP/Field Engineering to effectively inspect, monitor, and enforce contracts, including tracking this information in PTS;
12. reconcile right-of-way permits issued with excavation fees collected for fiscal years 2007 through 2010 and identify an effective method of reporting this information to the new Transportation and Stormwater Department in future years.

Other Pertinent Information

To improve planning, management, and oversight of the City's resurfacing program and contracts, we recommended that the Chief Operating Officer and Deputy Chief Operating Office for Public Works: *(Priority 2)*

13. revise current policies and procedures for pavement management and contracts to include conducting thorough and timely site assessments to ensure that cost estimates are as accurate as possible; and
14. define roles and responsibilities for managing resurfacing contracts and providing construction management services and establish a mechanism for internal control and oversight of resurfacing contracts.

Appendix I: Rankings of Urban Areas

TRIP—a national transportation research group—recently evaluated the conditions of roads in the nation’s most populous urban areas based on the International Roughness Index and Present Serviceability Rating.⁷⁹ TRIP included condition data for all major urban arterial routes in the City and surrounding suburbs that are maintained by federal, state, or local governments, which includes a wide range of highways and roadways from Interstates to city streets with two or more lanes. TRIP obtained this condition data, which are the latest available, from the FHWA’s 2008 annual survey of state transportation officials on the condition of major state and locally maintained roads based on a uniform pavement rating index. While there may be some variance in how transportation officials apply these indices, the FHWA data are the only national source of pavement condition ratings based on a consistent criteria. The rating categories of ride quality, for example substandard/poor, are based on FHWA’s study that measured driver reactions to determine the level of road roughness that is unacceptable to most drivers.

Rankings of Urban Areas with Highest Share of Roadways in Substandard/Poor Condition, Populations of 500,000 or more

Rank	Urban Area	Percentage of Roads in Substandard/Poor Condition
1	San Jose, CA	64
2	Los Angeles, CA	63
3	Honolulu, HI	62
4	Concord, CA	58
5	San Francisco-Oakland, CA	58
6	New Orleans, LA	55
7	New York, NY-Newark, NJ	53
8	San Diego, CA	50
9	Indio-Palm Springs, CA	47
10	Baltimore, MD	46
11	Kansas City, MO-KS	45
12	Riverside-San Bernadino, CA	44
13	Oklahoma City, OK	42
14	Sacramento, CA	42
15	Omaha, NE	42
16	San Antonio, TX	39
17	Detroit, MI	38
18	Philadelphia, PA	37
19	Tulsa, OK	36
20	Dallas-Forth Worth, TX	34

Source: TRIP.

⁷⁹ TRIP, *Hold the Wheel Steady: America’s Roughest Rides and Strategies to Make our Roads Smoother* (Washington, D.C.: 2010), 2.

Appendix II: Sampling of Streets Excavated During Moratorium Period

Sample #	Street Name	Range	From Street	To Street	Excavated During Moratorium?	Observations
Asphalt Overlay						
1	39TH ST 39TH ST	4500-4549 4550-4599	MONROE AV MADISON AV	MADISON AV END	No	Overlay not applied to connecting streets; Mark-outs apparent on Madison
2	AREY DR	4100-4199	TWINING AV	END	No	No trenches, overlay appears untouched with new curb ramps
3	AZUAGA ST	9900-10299	RANCHO PENASQUITOS BL	CAMTO CIERA	No	No overlay as of 11/19/09; street in poor condition; several silver mark-outs; several pictures of cracked seals and trenches
4	EL NOCHE WY	5340-5399	BEGIN	MONTEGO DR	No	Clean Overlay
5	HARTFORD ST HARTFORD ST HARTFORD ST HARTFORD ST	2200-2499 2500-2599 2600-2699 2700-2799	MILTON ST JELLETT ST INGULF ST HUXLEY ST	JELLETT ST INGULF ST HUXLEY ST CLAIREMONT DR	Yes, WWC Thought to be Emergency	8' X 8' trench on fresh overlay; damage from heavy equipment 20' from trench; observed mark outs
6	LAURELRIDGE RD LAURELRIDGE RD LAURELRIDGE RD LAURELRIDGE RD LAURELRIDGE RD LAURELRIDGE RD LAURELRIDGE RD LAURELRIDGE RD	7700-7899 7900-8099 8100-8149 8150-8169 8170-8189 8190-8199 8200-8269 8270-8359	PARK RIDGE BL OFRIA AV CIBOLA RD SUMMIT RIDGE WY LAURELRIDGE CT HIGH COUNTRY CT CLEAR SKY TR MTN TOP CT	OFRIA AV CIBOLA RD SUMMIT RIDGE WY LAURELRIDGE CT HIGH COUNTRY CT CLEAR SKY TR MTN TOP CT RIDGE ROUTE RD	No	Very clean street with no observed trenches
7	MONTEGO PL	5350-5389	BEGIN	MONTEGO DR	No	Clean overlay
8	OTAY MESA RD	4700-4949	REMINGTON HILLS DR	HAWKEN DR	No	Unfilled sewer/water trench on corner
9	PALLUX WY	8370-8469	VIRGO PL	BOREALIS RD	Yes, Nonemergency	Three 4' X 4' trenches on top of fresh overlay; resident mentioned ATT trenched about 1 month prior to field

Sample #	Street Name	Range	From Street	To Street	Excavated During Moratorium?	Observations
						visit to "improve service to a customer"
10	RIDGE ROUTE RD	8300-8339	LOFTY VIEW PT	LAURELRIDGE RD	No	Clean overlay
	RIDGE ROUTE RD	8340-8389	LAURELRIDGE RD	HIGH WINDS WY		
Slurry Seal						
11	HIGH BLUFF DR	12300-12399	CARMEL VIEW RD	EL CAM REAL	No	Segment is well slurried
12	SABRE SPRINGS PY	12150-12299	HEATHERTON CT	CREEKVIEW DR	No	Well slurried connector street into residential neighbors; no sign of damage since slurry
13	VILLAGE RIDGE RD	11200-11305	SCRIPPS CREEK DR	IVY HILL DR	No	Well slurried; no sign of damage
14	CARMEL VALLEY RD	2600-2849	PORTOFINO DR	POINTE DEL MAR WY	No	No apparent damage to slurry
15	AVNDA DEL GATO	11460-11469	CALLE NUEVA	TORRELL WY	No	2 Trenches; No apparent damage
16	BUHO CT	4000-4029	PAPAGALLO CT	END	Yes, Emergency	Huge trench at beginning of cul-de-sac (4 pieces); trench was made after recent slurry work; Onsite resident said it was sealed twice due to "equipment" damage
17	SPEAR ST	6410-6499	LANCE ST	BOUNTY ST	No	Street is clean with fresh slurry
18	OVERLAKE AV	5800-6001	RIDGEMOOR DR	GLENLEA LN	Yes, Emergency	6' X 6' trench on new slurry next to water meter at 5959 Overlake (2 pieces)
19	MUIR AV	4900-4999	CABLE ST	BACON ST	No	Planned/In Progress Work
20	SANTA MONICA AV	4800-4899	SUNSET CLIFFS BL	CABLE ST	Yes, Nonemergency	Water trench over fresh slurry
21	LONG BRANCH AV	4400-4499	VENICE ST	GUIZOT ST	No	Clean slurry throughout street with some bumpiness due to sealed cracks
22	WEST MISSION BAY DR	2000-2039	W MISSION BAY DR RA	W MISSION BAY DR RA	No	Only west side of street was slurried and not completely; several capped trenches on east side and not slurried
23	LA CRESTA DR	3800-3839	POE ST	CENTRALOMA DR	No	Clean slurry with no apparent trenches; some bumps from sealed cracks
	LA CRESTA DR	3840-3879	CENTRALOMA DR	BERNICE DR		

Sample #	Street Name	Range	From Street	To Street	Excavated During Moratorium?	Observations
24	ERIE ST	1900-2099	ASHTON ST	NAPIER ST	No	Clean slurry with no sign of trenching
25	KURTZ ST	3100-3199	CAM DEL RIO WEST	RILEY ST	No	Clean slurry
26	ELEVATION RD ELEVATION RD	1520-1549 1500-1519	BROWNELL ST ONSTAD ST	PLAINVIEW RD BROWNELL ST	No	Clean slurry, some bumps from cracks and old trenches
27	PLAINVIEW RD	5140-5199	ELEVATION RD	CUSHMAN AV	No	Clean seal on street; no trenches
29	HAMILTON ST HAMILTON ST	4100-4199 3900-3999	POLK AV UNIVERSITY AV	HOWARD AV LINCOLN AV	Yes, Emergency	Good seal with light cracking; "No seal" area skipped by contractor in front of 3945 Hamilton
30	LOUISIANA ST	3800-3899	WIGHTMAN ST	UNIVERSITY AV	No	Sealed well, however several sealed cracks show signs of failure (2 pieces); obvious seal failure over concrete cap (1 piece)
31	43RD ST	3500-3599	MYRTLE AV	DWIGHT ST	No	Entire street is cleanly sealed from University to Fairmont; no apparent trenches or failures
32	MANZANITA DR	4300-4339	HEATHER ST	GLENFIELD ST	Yes, Marked Out	Dig Alert markings in front of 4321 Manzanita; "No Cox" "No ATT" G w/yellow line (3 pieces)
33	ALGE CIRAS ST		BEGIN	CORNISH DR	No	Small cul-de-sac; slurry is clean with sealed cracks
35	FEDERAL (FTG) BL		49TH ST	MARY LOU ST	No	Sealed and clean w/1 speed bump on street
36	CALLE TORTUOSA	2100-2299	ALLEGHANY ST	POTOMAC ST	No	Heavy crack seal prior to slurry (2 pieces of crack seal); possible overlay candidate
37	RACHAEL AV	2520-2599	ROANOKE ST	BLUERIDGE ST	No	Sealed well with no trenches
39	SAIPAN DR	2430-2499	RUSTIC DR	HOMESITE DR	No	Several crack seals; no trenches or pipes
40	PLANICIE WY	1600-1629	RODEAR RD	POESIA CT	No	Sealed well; no apparent damage

Appendix III: Recommendation Priority Guide

The Office of the City Auditor maintains a classification scheme applicable to audit recommendations and the appropriate corrective actions as follows:

Priority Class ⁸⁰	Description ⁸¹	Implementation Action ⁸²
1	Fraud or serious violations are being committed, significant fiscal or equivalent non-fiscal losses are occurring.	Immediate
2	A potential for incurring significant or equivalent fiscal and/or non-fiscal losses exist.	Six months
3	Operation or administrative process will be improved.	Six months to one year

⁸⁰ The City Auditor is responsible for assigning audit recommendation priority class numbers. A recommendation which clearly fits the description for more than one priority class shall be assigned the higher number.

⁸¹ For an audit recommendation to be considered related to a significant fiscal loss, it will usually be necessary for an actual loss of \$50,000 or more to be involved or for a potential loss (including unrealized revenue increases) of \$100,000 to be involved. Equivalent non-fiscal losses would include, but not be limited to, omission or commission of acts by or on behalf of the City which would be likely to expose the City to adverse criticism in the eyes of its residents.

⁸² The implementation time frame indicated for each priority class is intended as a guideline for establishing implementation target dates. While prioritizing recommendations is the responsibility of the City Auditor, determining implementation dates is the responsibility of the City Administration.

Appendix IV: Management's Response



THE CITY OF SAN DIEGO
MAYOR JERRY SANDERS

MEMORANDUM

DATE: November 24, 2010

TO: Eduardo Luna, City Auditor

FROM: David Jarrell, Deputy Chief Operating Officer, Public Works

SUBJECT: Response to November 2010 Audit Report – “Street Maintenance - City Needs to Improve Planning, Coordination, and Oversight to Effectively Manage Transportation Assets”

Staff from General Services, Development Services and Engineering & Capital Projects departments have reviewed the Audit Report dated November 2010. We appreciate the time and effort that Auditor staff has put into considering and responding to over 100 comments the departmental staff provided on the draft reports, along with several meetings with departmental staff to discuss street-related operations. We believe that the time spent on the report and the collaboration between departmental staff and Auditor staff have served to significantly improve the final report.

The following comments are in response to the recommendations put forth in the report.

FINDING 1 - To improve planning and management of transportation assets and enhance coordination, accountability, and transparency over the City’s investment, we recommend that the Chief Operating Officer and Deputy Chief Operating Office for Public Works:

Recommendation 1: Assess the most effective organizational structure to manage the City’s transportation functions that will improve efficiency, enhance collaboration, and allow the Department to implement transportation asset management.

Response:

Agree. The City previously announced that the responsibilities of the Storm Water Department would be increased to include management of the City’s transportation functions. The responsibilities of the new Transportation and Storm Water Department (TSWD) will include streets operations and maintenance, transportation/traffic engineering, utilities undergrounding program management, storm water pollution prevention, storm drain operations and maintenance, and right-of-way coordination. The department will consolidate critical

Eduardo Luna
November 24, 2010

transportation management functions and ensure a high level of coordination with other City departments and private utilities that conduct work or have any involvement with work within the public right-of-way. The re-organization will be implemented on January 1, 2011.

Recommendation 2: Appoint a leader to advocate for transportation asset management and investment.

Response:

Agree. The Director of the new TSWD will be the designated leader to advocate for transportation asset management and investment. The new department will be established on January 1, 2011.

Recommendation 3: Begin to take steps to implement transportation asset management, including:

- setting well-defined policies and goals;

Response:

Agree. TSWD and other City departments involved with work within the public right-of-way, including Development Services, Engineering and Capital Projects and Public Utilities departments, will coordinate and set well-defined policies and goals within their respective area of responsibility. This will begin when the new department is established on January 1, 2011.

- establishing and reporting on performance measures;

Response:

Partially Agree. Performance measures for various right-of-way assets have been established. The performance measures are being updated and will be incorporated into FY12 budget. The measures will be reported on a quarterly basis beginning at the end of the first quarter, FY12.

- developing short- and long-term plans for transportation assets where the City lacks plans—such as for resurfacing, clarifying and enhancing existing plans, integrating all transportation-related plans, and making these available to the public, for example via the Department's website; and

Response:

Agree. Short and long term plans for transportation assets can be developed and made available to the public; however, the plans may be subject to modification

Eduardo Luna
November 24, 2010

should the availability or timing of funding change. The development of the plans will begin when the new department is established on January 1, 2011.

- annually reporting the City's various investments in transportation, including capital projects and maintenance.

Response:

Agree. Respective departments will annually report on various investments in transportation to the appropriate Council Committee. These reports will begin during FY12.

FINDING 2 - To improve coordination and planning and increase efficiencies of street-related projects, we recommend that the Chief Operating Officer and Deputy Chief Operating Officer for Public Works require that City departments:

Recommendation 4: Develop a 24-month Citywide excavation plan for all maintenance work and share this plan with other departments and relevant private entities to prevent and/or resolve to the extent possible conflicts involving planned projects.

Response:

Agree. TSWD will coordinate with other City departments and private utilities to ensure that the responsible party enters their planned work into the City's web-based application for coordinating work within the public right-of-way. TSWD will identify the departments and private entities required to provide their excavation plans; specify the information that needs to be provided and the frequency of updates; establish a mechanism to ensure the database is updated regularly, monitor the database, establish protocols to resolve conflicts, chair the Utilities Coordination Committee (UCC) and the Utilities Policy Committee (UPC); and establish protocol for capturing unplanned work; and monitoring compliance with data submission requirements and enforcement. Funding and resource availability and the occurrence of significant emergencies will have a direct impact on any plans developed. The initial 24-month Citywide excavation plan will be completed by July 1, 2012.

Recommendation 5: Develop and implement a documented process for ensuring that City departments and private entities comply with trench cut requirements and identify conflicts in a more timely manner, including establishing policies and procedures and internal controls.

Response:

Agree. TSWD will develop written standard operating procedures (SOP) for the protocol and processes described in the response to Recommendation 4. The SOP will be completed by July 1, 2012.

Eduardo Luna
November 24, 2010

Recommendation 6: Develop suggested changes to the Municipal Code for holding nonlinear cuts into pavement or the use of trenchless technologies to the same requirements as linear trench cuts during the moratorium period.

Response:

Agree. TSWD will work with all stakeholders via the UCC and UPC to determine the feasibility of applying the same requirements for linear trench cut to nonlinear cuts and trenchless technologies. TSWD will report the recommendations to the appropriate Council Committee by July 1, 2012.

Recommendation 7: Establish one Citywide subscription and email account for Underground Service Alert notifications within City limits that can be accessed by all relevant departments.

Response:

Agree. Based on the Auditor's recommendation, General Services and Public Utilities department staff met and initiated the steps required to combine the subscription to the Underground Service Alert. The work to combine the accounts is expected to be completed by July 1, 2011.

FINDING 3 - To improve oversight and coordination of work performed by private entities on or under City streets and ensure that streets are restored to an acceptable standard, we recommend that City Management conduct an evaluation and make recommendations to the City Council to:

Recommendation 8: Establish written policies and procedures and internal controls for inspections of work performed by private entities to ensure compliance with permit requirements.

Response:

Agree. E&CP staff have already begun to consolidate existing training materials, policies, procedures and internal controls into a comprehensive SOP for work performed by private entities to ensure compliance with permit requirements. E&CP Department will complete this SOP by July 1, 2011.

Recommendation 9: Revise City standards for trench restoration to establish more stringent requirements and ensure that public and private entities restore streets to an acceptable level, such as resurfacing curb to curb.

Response:

Agree. City standards for trench restoration are appropriate and in line with industry standards; however, the requirements for street resurfacing can be reviewed for potential changes. TSWD will work with City departments and private utilities through the UCC and UPC to explore potential revisions to the Trench Ordinance that would have more stringent

Eduardo Luna
November 24, 2010

requirements for street resurfacing after trenches have been properly restored. This effort will be initiated immediately after the department is formed in January 2011, and is expected to be completed by July 1, 2012.

Recommendation 10: Enforce the formal, specific trench repair requirements and establish stringent penalties for unpermitted work, which

- fully cover the cost of current and future degradation,
- are based on current costs and updated annually,
- incentivize public and private entities to coordinate street excavations.

Response:

Agree. TSWD will work jointly with Engineering & Capital Projects and Development Services departments, in coordination with UCC and UPC, to review current trench repair policies and determine the appropriate level of trench repair, ongoing costs, and appropriate penalties for unpermitted and uncoordinated work within the public right of way. This effort will be initiated immediately after the department is formed in January 2011, and is expected to be completed by July 1, 2012.

FINDING 4 - To improve oversight and coordination of work performed by private entities on or under City streets and ensure that streets are restored to an acceptable standard, we recommend that City Management conduct an evaluation and make recommendations to the City Council to:

Recommendation 11: Require written and complete records of in lieu warranties and moratorium waivers and other information that is needed by E&CP/Field Engineering to effectively inspect, monitor, and enforce contracts, including tracking this information in PTS.

Response:

Agree. Development Services Department staff have already updated procedures to document Moratorium Waivers in PTS so that information is available to Engineering & Capital Projects Department staff performing inspections, and so it can be audited by Development Services Department supervisors and the TSWD Right of Way coordinator. Development Services Department will work with the City Engineer, TSWD and the City Attorney's Office to document warranties provided by Public Utilities. This effort has been initiated, and is expected to be completed by January 1, 2012.

Recommendation 12: Reconcile right-of-way permits issued with excavation fees collected for fiscal years 2007 through 2010 and identify an effective method of reporting this information to the new Transportation and Storm Water Department in future years.

Eduardo Luna
November 24, 2010

Response:

Agree. Development Services Department staff have reconciled all of the ROW permits charged Trench Cut Fees from FY 2007 through 2010. Development Services Department will work with the TSWD ROW Coordinator to develop reports from PTS regarding Trench Cut Fees and work in the Public ROW. This effort is expected to be completed by January 1, 2012.

FINDING 5 - To improve planning, management, and oversight of the City's resurfacing program and contracts, we recommended that the Chief Operating Officer and Deputy Chief Operating Office for Public Works:

Recommendation 13: Revise current policies and procedures for pavement management and contracts to include conducting thorough and timely site assessments to ensure that cost estimates are as accurate as possible.

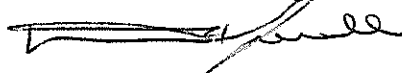
Response:

Agree. The current policies and procedures for pavement management and contracts will be revised to include conducting thorough and timely site assessments to ensure that cost estimates are as accurate as possible. This effort is expected to be completed by July 1, 2011.

Recommendation 14: Define roles and responsibilities for managing resurfacing contracts and providing construction management services and establish a mechanism for internal control and oversight of resurfacing contracts.

Response:

Agree. TSWD and Engineering & Capital Projects Department currently have defined roles and responsibilities related to managing the resurfacing contracts. The two departments will formalize the existing processes with proper documentation and continually discuss these roles and responsibilities and other issues as they arise during the regularly scheduled meetings between the two departments. The meetings begin prior to the project construction with the Pre-Construction meeting, and continue for the duration of the contract and after the contract ends as needed. These processes will be formalized in writing by July 1, 2011.



David Jarrell
Deputy Chief Operating Officer
Public Works

Cc: Jay M. Goldstone, Chief Operating Officer
Wally Hill, Assistant Chief Operating Officer
Mario Sierra, Director, General Services Department
Kelly Broughton, Director, Development Services Department
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